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AURICULAR FLUTTER IN ACUTE RHEUMATIC CARDITIS.*

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ACUTE rheumatic inflammation of the heart is associated with changes in the endocardium, the pericardium, and the myocardium. One or more of these structures may be involved, and in some cases all are. At the present time it is generally recognised that although endocarditis and pericarditis may be present, the important question in determining the prognosis is how far has the myocardium been involved. More especially does this apply to the muscle of the left ventricle, on which the efficiency of the circulation must, in the last instance, depend. If the heart does give out we are inclined to trace this to the weakening effect of the inflammatory changes in the myocardium.

There is another factor which may possibly play an indirect but important part in leading up to cardiac failure in cases of acute carditis, and that is the development of an abnormal rhythm of the heart. The onset of an abnormal rhythm does not necessarily mean

* A paper read before the Section for the Study of Disease in Children of the Royal Society of Medicine on April the 24th, 1914.

that the action of the heart is irregular, as tested by the ordinary methods. In acute carditis the rate of the heart is usually greatly increased, and one is often struck by the absolute regularity of the action under this increase of rate. The ventricular action as tested at the apex is perfectly regular, and this finding is confirmed on feeling the pulse. Similarly a long tracing from the radial artery will probably show absolute regularity in the spacing of the beats, when the cardiac rate is from 120 to 150 per minute. Various forms of youthful irregularity, which may have been present before the attack, are completely abolished when the cardiac action becomes rapid. Estimated then by the pulse or by the apex beat the cardiac action in acute carditis is usually found to be perfectly regular, and from this one is inclined to infer that the normal cardiac rhythm is present. The above tests, however, are dependent entirely on observation of the action of the ventricles, while in the majority of cases an abnormal rhythm is developed in the auricles and not in the ventricles. If the regular action of the ventricles is not interfered with, the presence of an abnormal rhythm developed in the auricles may be entirely unsuspected, and may indeed be unrecognisable by the ordinary methods of examination at the bedside. The action of the auricles can be determined more precisely by means of the electro-cardiograph and less precisely by means of the venous tracing taken with the polygraph.

I have recently met with two cases of acute rheumatic carditis in which there was apparently an abnormal rhythm of the auricles, and which was recognised only on taking a venous tracing in the neck. The form of disorder was one in which the auricular rate was greatly accelerated, while the ventricle did not share in this acceleration. In other words a number of the auricular contractions failed to be followed by ventricular contractions. Such a condition may be due to the presence of heart-block, or to the failure of the ventricle to respond to all the stimuli reaching it at the increased rate. In the cases referred to the auricular and ventricular rates were perfectly regular. Taking into account the rapidity and the regularity of both auricular and ventricular contractions, I am inclined to trace the slower ventricular rate not to any interference with the conductivity of the junctional tissues (heart-block), but to an inability on the part of the ventricle to respond to each auricular stimulus, owing to the extreme rapidity of the auricular contractions. It seems to be rather contradictory to speak of heart block when the ventricle is contracting 125 to 140 times per minute.

The first tracing (Fig. 1) was taken from a female child, aged 8

years, suffering from rheumatic carditis. The lower part is from the radial artery and shows a regular action at the rate of 140 beats per minute. The slight irregularity in the force of the beats is due to movements of the arm associated with respiration. The upper part is the venous tracing from the neck. The action of the auricles as here represented is also regular and the waves occur at the rate of 280 per minute. It is suggested that each of these

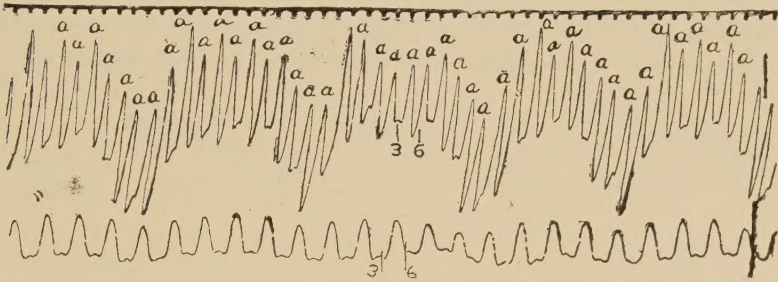


FIG. 1.—(Case 1). Jugulo-radial tracing. Note the amplitude and similarity of the venous waves. If each venous wave represents an auricular contraction, the auricular rate is twice as rapid as the ventricular ($A : V :: 2 : 1$), the auricle beating 280 and the ventricle 140 times per minute.

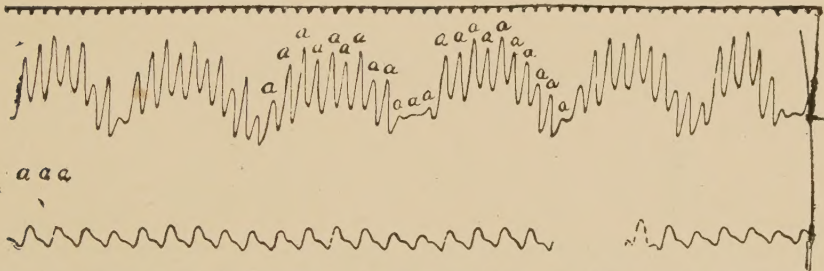


FIG. 2.—Same case, following day. Jugulo-radial tracing. Two venous waves for each radial beat ($A : V :: 2 : 1$). Same character of venous pulse. Auricular rate still 280, and ventricular 140 per minute. The large undulations in venous tracing are respiratory in origin.

waves represents a contraction of the auricle. As compared with an ordinary venous tracing the following points may be noted as regards the waves; the excessive amplitude, the similar character, the identical spacing between each, and the absence of the normal $a - c - v$ waves on inspection or measurement. The large undulations in the tracing are due to the exaggerated respiratory movements present. On the following day another tracing was taken (Fig. 2) which shows the same characteristic features as the last, the amplitude of the venous curves being less marked. The

auricular rate is still 280 and the ventricular 140 per minute. Three days later the third tracing was taken (Fig. 3), which shows a normal venous curve. The auricular and the ventricular rates were now the same, namely 105 per minute.

The second case was a girl, aged 6 years, suffering from acute pericarditis and myocarditis, supervening upon former rheumatic cardiac disease. She was acutely ill and dyspnoëic, and consequently the taking of venous tracings from the neck presented considerable difficulty. The first tracing (Fig. 4) shows the dicrotic form of

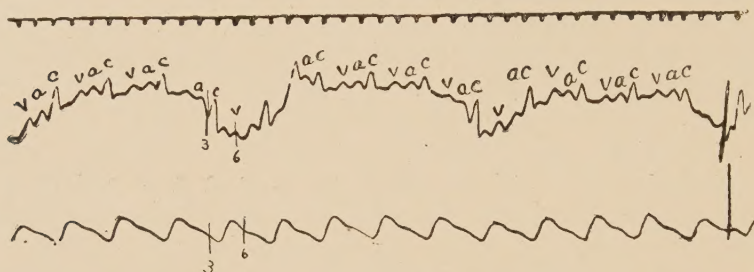


FIG. 3.—Same case, three days later. Jugulo-radial tracing. Venous tracing is normal. Auricles and ventricles beating at the same rate, 105 per minute.

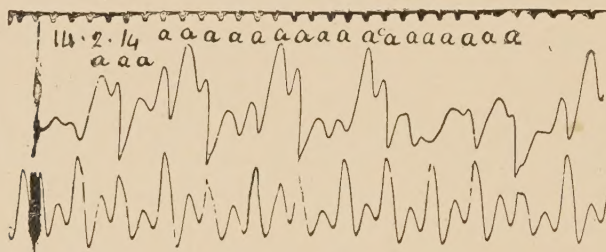


FIG. 4.—(Case 2). Jugulo-radial tracing. Suggested that venous waves are due to auricular contractions. They are double in number the contractions of the auricle ($A : V :: 2 : 1$). Auricular rate 250 and ventricular 125 per minute.

radial pulse common in such conditions. The venous part shows a succession of similar waves, although much affected by respiratory movements, following each other in rapid succession with great regularity, and not easily identified according to an ordinary venous interpretation. I have suggested as indicated by the marking that these waves are due to auricular contraction. They occur at the rate of 250 per minute, while the ventricular contractions are 125 per minute. The next tracing (Fig. 5) was taken two days later and shows a similar condition, the auricular rate being still double that of the ventricle. A further tracing (Fig. 6) was taken a week later and shows three venous waves for every radial beat. The

character of these waves suggests that they are due to auricular contractions, in which case the auricles would be contracting at the rate of 390 per minute while the ventricular rate was 130, *i. e.*, an auriculo-ventricular ratio of three beats to one. The presence of pulsus alternans is shown in the brachial tracing here, and also in (Fig. 7).

These tracings would appear to show the presence of an abnormal action of the auricles which seems to me to correspond in many

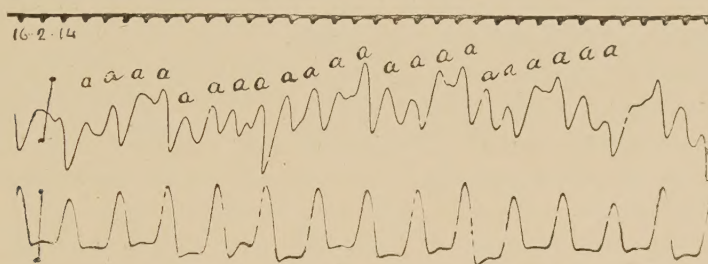


FIG. 5.—Same case, two days later. Jugulo-radial tracing. Same form of venous curve. A = 250. V = 125.

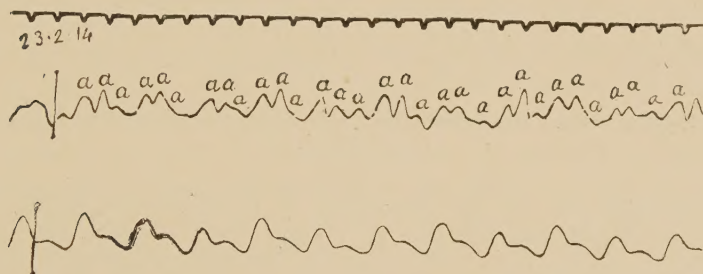


FIG. 6.—Same case, seven days later. Jugulo-radial tracing. Three auricular contractions to each ventricular contraction (A : V :: 3 : 1). Auricular rate is 390 and ventricular is 130 per minute.

respects with the so-called auricular flutter. I am quite aware that other explanations may be offered, and that the above one may be quite wrong. In acute cases such as the above the electro-cardiograph which might settle such a question is not available for most of us, and we must still make the best of other methods of examination. In many cases of acute carditis the respiratory movements are so exaggerated that it is impossible to take jugular tracings with the polygraph, and the ones here shown have many imperfections owing to the respiratory distress. Among the irregularities of the cardiac action associated with diphtheria Dr. W. E. Hume* believes that

* 'Heart,' 1913, v, p. 25.

he has found in two cases the presence of auricular flutter, the patients being aged seven years and five years respectively. The auricular rates in his cases were between 480 and 500, and although no such rapidity has been found in adult hearts, he suggests that the auricles of a child may be capable of attaining a higher speed than those of adults. A point in favour of the view that an abnormal rhythm was present in my cases lies in the occurrence of the pulsus alternans in one. Dr. Mackenzie informs me that in his experience that form of pulse is found in the young only in association with some abnormal form of rhythm.

Such a form of disordered rhythm may have an important bearing on the efficiency of the cardiac action. The normal mechanism of the heart consists of an orderly sequence in auricular and ventri-

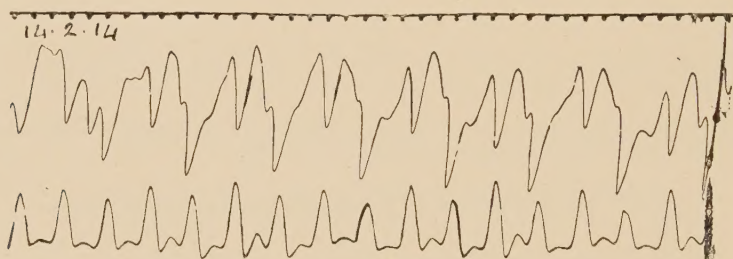


FIG. 7.—Same case. The pulsus alternans is shown in the radial tracing, and also in Fig. 6.

cular contractions. If this sequence is disturbed, as by auricular flutter, the ventricles will fail to receive their proper amount of blood at the proper time. They will be irregularly and incompletely filled. As a large number of the auricular contractions take place while the ventricles are in a state of systole the result will be a reflux into the veins and a damming back of the venous blood (back pressure). While a healthy heart might continue for some time to carry on the circulation quite efficiently under this condition, the position is different when acute carditis is present. The already weakened heart may find itself hopelessly crippled by the supervention of auricular flutter, and the signs of cardiac failure may be rapidly induced or gravely aggravated. Such a result has now become familiar in connection with an allied condition of auricular disturbance, namely fibrillation, where the disordered rhythm leads to great impairment of the cardiac action.

As already pointed out the condition of auricular flutter is often latent and unsuspected. As practical points for further investigation

I might suggest that attention be paid to the following possible indications of the presence of this abnormal form of rhythm.

(1) Attacks of cardiac asthma (great dyspnœa) occurring suddenly and without accompanying variations in the cardiac condition. In one of the above cases there were two such attacks preceding the acute illness, and they were at the time diagnosed as asthmatic in origin. (2) A triple or galloping or cantering rhythm heard on auscultation. In both of the above cases there was a triple rhythm present, heard both at the apex and in the neck. In Dr. Morison's case of jugulo-embryocardia, which was the first example of auricular flutter recorded, each auricular contraction was audible in the right supra-clavicular region, the auricular rate being 240, while the ventricular was 114. (3) Pericarditis without effusion and with great respiratory distress. The inflammatory changes in pericarditis are usually earlier and more marked about the auricles than the ventricles, and a disturbed auricular rhythm may follow from the active effusion in and around the auricular walls. (4) Dyspnœa, cyanosis, and enlargement of the liver out of proportion to the physical signs of disease in the heart. (5) The presence of the pulsus alternans.

Further investigations will be required to determine whether in cases of acute carditis a disordered rhythm of this nature is often present. If it is found I should be more hopeful of the treatment, for a disordered rhythm will respond to treatment by means of digitalis much better than a ventricle weakened by acute inflammation or toxæmia will. If we can control the rhythm we shall place the patient in a much better position for weathering the attack. On the other hand if we cannot control the disordered rhythm, it may be found that the prognosis is made materially worse by the development of this abnormal auricular action, as compared with those cases in which no such disorder of the mechanism is present.

Case (1) A female child, aged eight years, was admitted with the history of pain in the neck for a week, and more recently of pains in the knees and hands. There was no history of previous rheumatic infection.

On admission her temperature was 101.2° F., the pulse was 132 and regular, and the respirations 30. There was no actual swelling of the joints, but pain on movement was complained of in both wrists, in the fingers and in the knees. The tonsils were definitely enlarged. The apex beat of the heart was palpable in the fourth space a quarter of an inch outside the nipple line. The right border did not extend beyond the right edge of the sternum. The apex beat and heart sounds were feeble, but the ventricular action was regular.

On auscultation a well-marked triple rhythm was heard at the apex, described as cantering, and ascribed to a reduplicated second sound. No murmur was present. She was ordered one drachm of salicylate of soda daily.

On the third day after admission the temperature reached normal and did not rise again. The arthritic pains soon passed off, but the pulse rate slowed down very gradually. The triple rhythm of the heart was not heard after the second day. There was progressive dilatation of the heart on the left side until the apex extended three quarters of an inch outside the nipple line, and a systolic murmur became audible at the apex. At the end of a fortnight the pulse was regular and good at 80 per minute, and the dilatation was less.

She has been kept under observation for five months and has had a good deal of rest as the cardiac rate runs up quickly to above 100 on any exertion, and a varying amount of dilatation has persisted.

Case (2) A female child, aged 6 years, was admitted to hospital with a history of two days' illness, characterised by pain about the heart and left shoulder, shortness of breath, loss of appetite, sleeplessness, and depression. There was no history of rheumatic fever, but eight months previously the mother was told by a doctor that the child had heart disease, which caused the shortness of breath from which she suffered. Six months previously, she had been in hospital owing to an attack of acute bronchitis. At that time the heart was found to be slightly dilated, and there was a systolic murmur following the first sound at the apex, and conducted well into the axilla. The bronchitic signs soon disappeared, but on the fourth and sixth days after admission she had attacks of severe dyspnoea, lasting for a short time and regarded as asthmatic in character.

On admission the temperature was 102° F., the pulse 140, and the respiration 72. The child looked very ill, the face was pale, and the expression anxious and pained. A troublesome cough was present, which aggravated the pain about the heart. There was orthopnoea and the lungs presented the signs of oedema and bronchial catarrh. There was diffuse præcordial pulsation and both sides of the heart were dilated. A well-marked pericardial rub was present over an area extending from the apex to the sternum. Intra-cardiac murmurs were difficult to distinguish, but a systolic murmur could be heard at the apex. The liver was much enlarged and the veins of the neck pulsated markedly.

The illness ran an irregular course, but there was never any definite improvement. The temperature fluctuated, but seldom rose above

100·5° F. The area of cardiac dullness increased, extending one and a half inches beyond the nipple line on the left, and three-quarters of an inch beyond the right border of the sternum. This was clearly due to dilatation of the heart, as pericardial friction was also present and extending. Pleural friction appeared in the right and then in the left axillary region. Pain in the left shoulder was much complained of. This seemed to be definitely cardiac in origin for there was no evidence of arthritis, and the arm could be moved freely without discomfort.

There was always a mitral systolic murmur present and at times a diastolic one. The pulse continued rapid, averaging about 120, and was soft and dicrotic. Coughing was often troublesome. Dyspnoea was always present and was sometimes aggravated by paroxysmal attacks of great severity. Vomiting occurred at times. Towards the end, which came on the eighteenth day of the illness, some œdema of the lower extremities and of the vulva was present.

At the necropsy the pericardium was found to be adherent to the heart, and intimately so at the base. The pericardium was thickened, acutely congested, and lined with gelatinous exudate. The heart was very much enlarged. The walls were congested, and on section, dripped blood. All the cavities were dilated. The valves presented no change, save that the margin of the mitral valve was thick and puckered. There was collapse of the lower lobe of the left lung, and a patch of pleural thickening and congestion (recent) over the base of the right lung. A microscopic examination of the cardiac tissues has not yet been made.

A FAMILIAL CASE OF SPLENOMEGALIC ANÆMIA WITH INFANTILISM.*

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IN a paper with Dr. G. Dorner,* in January, 1910, on "Four Cases of Congenital Acholuric (so-called Hæmolytic) Jaundice in One Family," I suggested (after French authors) that the term "Splénomegalic Anæmia" might be used for similar cases to those which we described, if the jaundice (that is to say, obvious or *clinical*

* A paper read before the Section for the Study of Disease in Children of the Royal Society of Medicine on May the 22nd, 1914.

† F. P. Weber and G. Dorner, 'Lancet,' London, 1910, i, pp. 227-232.

jaundice) disappeared, though the splenomegaly and characteristic blood-features remained. Such cases of "splenomegalic anæmia" without jaundice may certainly occur (though sometimes perhaps only as temporary phases, the jaundice becoming intermittent instead of remittent) as incomplete or anomalous forms of chronic splenomegalic acholuric jaundice.* The term suggested would serve to distinguish such cases from: (A) forms of anæmia with splenomegaly usually classified under the headings, "Splenic anæmia of adults" and "Banti's disease"; and (B) cases of so-called "infantile splenic anæmia," the "anæmia pseudoleukæmica infantum" of von Jaksch. The case I am now going to describe may perhaps be regarded as an example of such "splenomegalic anæmia."

The patient, E. N., was just 17 years old when I showed him on June the 10th, 1911, at the annual meeting (in London) of the Association of Physicians of Great Britain and Ireland. He then looked rather anæmic, and the conjunctiva over the sclerotics of his eyes had a yellowish tinge. He certainly was small and somewhat infantile in development. In ordinary clothes and boots he measured 5 ft. 1½ in. in height, and weighed 6 st. 9 lbs. His skin was very smooth and tender looking. There was no pubic or axillary hair and the penis and testes were very small. The spleen was enlarged and hard, reaching down into the pelvis, but nothing else was found abnormal in regard to the thoracic and abdominal viscera. The liver could not be felt. The superficial lymphatic glands were not enlarged, excepting very slightly (as so commonly is the case) in the groins. There was no oedema anywhere. Urine (May the 29th, 1911): Specific gravity 1009; slightly acid; free from albumin and sugar; the Gmelin's reaction for bilirubin was negative, but the reactions for urobilin and urobilinogen were positive; the reaction for indican was negative. Blood examination (Dr. G. Dorner, May the 29th, 1911): Red cells, 3,481,100; white cells, 14,300, in the cubic millimetre of blood; hæmoglobin (Sahl's method), 64 per cent.; colour index, 0·9. Differential count of 500 white cells: Polymorphonuclear neutrophiles 63·6 per cent.; small lymphocytes

* Cf. Armand-Delille and Feuillié, "Un cas d'Anémie splénomégalyque avec Fragilité globulaire," 'Bull. et mém. Soc. Méd. Hôp. de Paris,' 1909, xxvii, p. 266; Armand-Delille, "L'anémie splénomégalyque, par fragilité globulaire, chez l'enfant," Association internationale de Pédiatrie (congress held at Paris in October, 1912) 'Presse médicale,' Paris, 1912, xx, p. 843; Chauffard and Troisier, "Des rapports de certaines anémies splénomégalyques avec l'ictère hémolytique congénital," 'Bull. et mém. Soc. Méd. Hôp. de Paris,' 1909, xxvii, p. 293; Chauffard, Troisier and Girard, "Ictère poly-cholique aigu à la fois par hémolysémie et par fragilité globulaire, au cours d'une anémie splénomégalyque," *Ibid.*, 1912, xxxiii, p. 726.

26·0 per cent. ; large lymphocytes 6·0 per cent. ; large mononuclears 0·2 per cent. ; "transitionals" 1·0 per cent. ; mast cells 0·8 per cent. ; eosinophiles 2·4 per cent. During the count of the 500 white cells four nucleated red cells (all normoblasts) were seen. Anisocytosis and polychromatophilia of the red cells were marked ; there was likewise, in a lesser degree, some poikilocytosis present. The blood platelets seemed to be of average amount.

Later in 1911 (November) there was moderate swelling behind and below the malleoli of the right ankle. During the differential count of 500 white cells six nucleated red cells (all normoblasts) were seen.

After 1911 I think I did not see the patient till December the 15th, 1913, when he was confined to bed, œdematous and of a ghastly pale colour. The doctor who was attending him arranged for his admission to the German Hospital, but he died at home on December the 24th. The doctor said there was no appearance of jaundice during his final illness, but only of anæmia and dropsy. There was no necropsy.

Early history.—The boy was born at full term with the help of instruments, and was very yellow at birth. A sallowness of complexion with slight yellowness of the sclerotics persisted. As he grew up he was subject to recurrent attacks of "depression," during which his urine became darker, and he appeared yellower and suffered from lassitude and drowsiness. These attacks recurred about every three months on the average and lasted a few days. About 1908 he had several severe attacks of abdominal pain. Occasionally on blowing his nose he noticed spots of blood on his handkerchief ; but he never had regular epistaxis and never had bleeding from the gums or any other form of hæmorrhage, excepting a mild attack of purpura in 1899, when he was four or five years old. At that time, according to Dr. Porter Parkinson, who showed the patient, together with one of his sisters, at the Society for the Study of Disease in Children,* his blood contained many small nucleated red cells (microblasts). His spleen was apparently first noticed to be large when he was three months old. He was subject to nocturnal enuresis. At one year of age he had had croup.

In 1908, when fourteen years old, he came under my care, and on February the 12th, 1909, I showed him at the Clinical Section of the Royal Society of Medicine.† In 1909 he appeared fairly well developed, but anæmic, and his sclerotics had a slight but distinct

* See the 'Rep. Soc. Stud. Dis. Child.,' London, 1906, vi, p. 8.

† 'Proc. Roy. Soc. Med.,' 1909, ii, Clin. Sect. p. 117.

icteric tinge. The spleen was evenly enlarged and hard, reaching downwards to the anterior superior iliac spine. The liver could not be felt. The fæces were coloured. The urine was generally of rather low specific gravity, clear, pale and free from albumin, sugar and bilirubin, but it sometimes showed excess of urobilin. The blood-serum was kindly examined by Mr. L. S. Dudgeon (in November, 1908) at a time when, clinically, the jaundice was scarcely if at all recognisable, and was found to contain bile-pigment. The thoracic organs and other parts of the body showed nothing abnormal, excepting that on one occasion a systolic murmur was heard over the mid-cardiac area, probably not due to organic disease. The fingers were not clubbed; no enlargement of the superficial lymphatic glands or of the tonsils was present; there was no pruritis or cutaneous affection. Syrup of iodide of iron seemed to do the boy good.

The blood, examined during the periods in which the boy was nearest to the normal, sometimes showed the presence of a few normoblasts. In a blood-film of January the 21st, 1909, one of the normoblasts had a double nucleus; in another blood-film of the same date one myelocyte was present in addition to several normoblasts. The red cells varied much in size ("anisocytosis") and staining ("polychromatophilia"). The average diameter of the red cells was, if anything, below the normal standard. A blood-count, on November the 6th, 1908, gave 2,800,000 red cells and 14,280 white cells to the cubic millimetre, and the differential count of white cells (kindly made by Dr. A. E. Boycott) gave: lymphocytes, 20·6 per cent.; intermediates, 4·8 per cent.; large hyalines, 4·4 per cent.; polymorphonuclear neutrophiles, 68·4 per cent.; eosinophiles, 1 per cent.; and mast-cells, 0·8 per cent.; no nucleated red cells were seen on that occasion. A later blood-count (January the 21st, 1909) gave 3,140,000 red cells and 14,500 white cells to the cubic millimetre of blood. The corresponding differential count of 500 white cells (again kindly furnished by Dr. A. E. Boycott) gave: lymphocytes, 20·6 per cent.; intermediates, 5·6 per cent.; large hyalines, 3·2 per cent.; polymorphonuclear neutrophiles, 66·8 per cent.; eosinophiles, 3·2 per cent.; mast-cells, 0·8 per cent. During the count of 500 white cells 20 nucleated red cells were seen. Four of these were typical normoblasts; two were normoblasts with budding nuclei; and fourteen were nucleated red cells with polychrome cytoplasm, irregular in shape and about the size of a typical normoblast. The red cells showed much polychromatophilia and marked anisocytosis (mostly on the small side, as compared to the normal average),

but hardly any poikilocytosis. At a still later blood-examination (by Dr. G. Dorner, on November the 15th, 1909), the number of nucleated red cells was estimated at 729 in the cubic millimetre of blood, when the red cells were counted at 3,533,330 and the total white cells at 23,000 in the cubic millimetre of blood: hæmoglobin (Sahli's method), 50 per cent.; colour index, 0·7; the blood-platelets were not decidedly in excess of the normal. The nucleated red cells were mostly polychromatophilic, and some contained basophilic granules in their cytoplasm (punctate basophilia).

On various occasions the resistance of the erythrocytes towards hypotonic saline solutions was tested by Ribierre's method, and it was found that hæmolysis occurred when a few drops of the patient's blood, diluted with physiological saline solution, were added to a solution of between 0·40 and 0·48 parts per cent. of sodium chloride in distilled water; the "fragility" of the patient's red cells, estimated in this way by Dr. Chapuis, appeared to be slightly greater than the average in normal individuals who were used as controls. On November 25th, 1908, Mr. L. S. Dudgeon kindly examined the patient's blood-serum by a method described by him in the 'Proceedings of the Royal Society,' London, 1908, ser. B, vol. lxxx, p. 531. He found that the blood-serum did not exert any hæmolytic action on the red corpuscles of a healthy individual, or on the red corpuscles of the patient himself (that is to say, it had no auto-hæmolytic action); nor had blood-serum from a normal individual any hæmolytic action on the patient's red cells.

Dr. A. E. Boycott, in May, 1909, kindly estimated the boy's total blood-volume by Haldane and Lorrain Smith's carbon monoxide method,* and reported that it exceeded the normal for the body-weight by 60 per cent. (as apparently it often does in cases of chlorotic anæmia).

No Wassermann's reaction was taken in the present case, but the patient's father and mother showed no signs of syphilitic taint. The mother has had thirteen children and no miscarriages. She said that all her children were born yellow and remained yellow for three to six months after birth, but in the subject of the present paper yellowness or sallowness lasted more or less continuously. The eldest four children died early; the fifth, sixth, seventh, ninth,

* See Haldane and Lorrain Smith, *Journ. of Physiol.*, London, 1900, xxv, p. 331; Lorrain Smith, *Trans. Path. Soc.*, London, 1900, li, p. 311; Lorrain Smith and McKisack, *Ibid.*, 1902, liii, p. 136; Douglas, *Journ. of Physiol.*, 1906, xxxiii, p. 493; Boycott and Douglas, *Journ. of Path. and Bact.*, Cambridge, 1909, xiii, pp. 117 and 256, and *Guy's Hosp. Rep.*, 1908, lxii, p. 157; Oerum, *Deutsch. Arch. f. klin. Med.*, Leipzig, 1908, xciii, p. 356.

tenth, and thirteenth were reported living and healthy*; the eighth was the subject of the present paper; the eleventh died as a baby. The twelfth, a girl with anæmia and splenomegaly without jaundice, died at the age of 1 year and 8 months. She had been shown, together with her brother (the present case), by Dr. Porter Parkinson at the Society for the Study of Disease in Children,† and, though there was no actual jaundice, the skin was stated to have a lemon yellow colour. Her spleen reached down to the anterior superior iliac spine, and her liver could be felt one finger's breadth below the costal margin. Her erythrocytes varied much in size (none very large), and numbered 3,393,000 to the cubic millimetre of blood. Her white corpuscles numbered 52,570, and the differential count gave: polymorphonuclear neutrophiles, 42 per cent.; eosinophiles, 10 per cent.; small mononuclears, 36 per cent.; large mononuclears, 9 per cent.; myelocytes, 3 per cent.

The difficulty in the diagnosis of a case like the present one is to exclude the Gaucher type of primitive splenomegaly.‡ In that disease a yellowish or brownish tinge of the skin has sometimes been noted, as well as a tendency for two or more brothers and sisters to be affected; moreover, the presence of nucleated red cells in the circulating blood has occasionally been recorded, and a very large spleen (such as was present in the boy, E. N.) is perhaps of relatively more frequent occurrence in Gaucher's type of splenomegaly than in congenital and familial chronic acholuric jaundice (examples of which have been reported without even any clinically recognisable splenomegaly at all). On the other hand, the points against the diagnosis of the Gaucher type of splenomegaly and in favour of the case being one of congenital acholuric jaundice, or rather of the

* One of these has, however (since this history was obtained), been under my care with rheumatic fever and rheumatic valvular disease of the heart.

† 'Rep. Soc. Stud. Dis. Child.,' loc. cit.

‡ On the Gaucher type of splenomegaly see especially, E. Gaucher, 'De l'Épithéliome primitif de la Rate,' 'Thèse. de Paris,' 1882, and later writing by the same author; N. E. Brill, 'Amer. Journ. Med. Sci.,' Philadelphia, 1901, cxxi, p. 377; Brill, Mandlebaum, and Libman, *Ibid.*, 1905, cxxix, p. 491, and 1909, cxxxvii, p. 849; F. Marchand, 'Munch. Med. Woch.,' 1907, liv, p. 1102; F. Schlagenhauer, 'Virchow's Archiv,' 1907, clxxxvii, p. 125; J. C. G. Ledingham, in "Allbutt and Rolleston's System of Medicine," vol. v, 1909, p. 766; W. Risel, 'Beit. z. Path. Anat. u. z. allg. Path.,' 1909, xlv, p. 241; P. Rettig, 'Berl. klin. Woch.,' 1909, xlv, p. 2046; A. Plehn, 'Deutsch. Med. Woch.,' 1909, xxxv, p. 1749. Of still more recent articles there are especially the following: Brill and Mandlebaum, 'Amer. Journ. Med. Sci.,' 1913, cxlvi, pp. 863-883; F. S. Mandlebaum, 'Journ. Exper. Med., New York,' 1912, xvi, pp. 797-821; W. A. Downes 'Med. Record,' New York, 1913, lxxxiii, p. 697 (successful splenectomy); Erdman and Moorhead 'Amer. Journ. Med. Sci.,' 1914, cxlvii, pp. 213-224, (early splenectomy); Niemann 'Berl. klin. Woch.,' 1914, li, p. 277.

allied condition of "splenomegalic anæmia" (see my remarks at the commencement of the paper), are practically convincing. The patient's blood contained bilirubin and his urine was free from it. His fæces were well coloured. Examination of his red blood corpuscles (the mean diameter of which was rather below than above the normal standard for healthy individuals) showed hardly any poikilocytosis, but very marked anisocytosis, polychromatophilia, the presence of normoblasts, and a greater tendency to hæmolytic than is usual for normal individuals. Moreover, infantilism has never, as far as I am aware, been observed to accompany the Gaucher type of splenomegaly, whereas it certainly has been recorded in cases of congenital hæmolytic jaundice. Thus Roemer recently described such a case in a child in whom the large hard spleen was removed by operation.*

NOTE.—A further point against the case being one of the Gaucher type of primary splenomegaly should be mentioned, namely, the absence of the pinguecula-like thickening of the conjunctivæ, which N. E. Brill and F. S. Mandlebaum in their paper ('Amer. Journ. Med. Sci.,' 1913, cxlvi, p. 863) on "Large-cell Splenomegaly (Gaucher's Disease)," claim as a characteristic feature. My attention was directed to the importance of this by Dr. H. D. Rolleston in the discussion on my paper. They write: "Early in the disease a change in the conjunctiva of both eyes may be noted. This manifests itself in a brownish-yellow, wedge-shaped thickening, affecting first the nasal side of each conjunctiva, its base being limited by the cornea. Later on the temporal side also becomes the seat of a similar thickening. The development and growth of these thickenings are very slow. . . . They resemble in some respects the lesion of the conjunctiva known as *pinguecula*. . . . We have never seen a case of the disease in which this peculiar ocular lesion was absent."

* See Roemer, at the Aertzlicher Verein zu Hamburg, February 17th, 1914, 'Berl. klin. Woch.,' 1914, li, p. 669. The splenectomy was followed by immediate diminution of the jaundice and of the associated anæmia.

ASSOCIATED MOVEMENT OF THE JAW AND UPPER LID:
 "THE JAW-WINKING PHENOMENON."

By E. A. COCKAYNE, M.D., M.R.C.P.

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SINCE Marcus Gunn showed his case of associated movements of the jaw and upper lid before the Ophthalmological Society in 1883 more than seventy similar cases have been recorded. The great majority of these are congenital and fall into a fairly well-defined group. The phenomenon itself consists in the involuntary raising of the upper lid while performing some movement of the jaws, face, tongue, or pharynx. In a few cases, such as those of Fuchs, Just, Fraenkel, and Wilbrand and Saenger, this is the only defect present, but much more often it is accompanied by ptosis on the affected side. In sixty-three cases ptosis was present in fifty-two and absent in eleven. The anomaly is usually unilateral. In one case the movement has been bilateral, that of von Adamück, and in two others, though the movement has been confined to one side, there has been a defect of the upper lid on the opposite side. Rampoldi's bilateral case is so unusual in its features that it is doubtful if it falls into the group at all. The ptosis, when it occurs, may be very slight or may be complete; voluntary power over the lid may be perfect, but more often is only partial; in some cases the lid could only be raised with the head held back, in others with the sound eye covered, and sometimes there is no voluntary power whatever.

In addition to ptosis there are often other defects, the commonest being paralysis or paresis of the superior rectus muscle. Sinclair noted this in ten cases out of twenty-seven in which ptosis was present. Less often there is paralysis or paresis of one of the other ocular muscles, such as the rectus internus (Uhthoff), the superior oblique (Lutz), or the inferior oblique (Cantonnet). In Thomson and Souter's case there was slight vertical squint and slight latent divergence. In Friedenwald's case there was crossed diplopia with vertical displacement, the image of the right eye, the affected side, being the higher.

In Vossius' case there was complete ophthalmoplegia externa of both sides, with jaw-winking on one side only; in Van Lint's there was intense nystagmus on lateral movement, especially on looking to the affected side. In some cases a difference in the size of the

pupils has been noticed; in Sinclair's, Müller-Kanberg's and Snell's cases it was smaller; and in Parsons' larger on the affected than on the unaffected side, but the pupils reacted to light. In Rampoldi's and von Adamück's cases there was some exophthalmos, a fact which led the latter observer to put forward a theory that the whole condition is due to a venous connection between the veins emptying from the orbit and the muscles of mastication. In Goldzieher's case when chewing became vigorous the lid went up, and in addition the eye itself rolled downwards and outwards and became a little proptosed. In many instances vision has been unimpaired, in others it has been diminished, and complete amblyopia has been met with on the side of the lesion. In Hubbel's case, for example, there was complete ptosis of the right eye with amblyopia, and in addition paralysis of the right superior and internal recti muscles.

In Snell's case the face was smaller, and the tarsal plate reduced in size on the side of the lesion. Facial paralysis was met with in another example.

Errors of refraction are common, and Hillemanns found a marked difference in the two eyes; in the right there was 1 D. hypermetropia, and in the left, the affected side, 2.5 D. myopia, but no ptosis and no diplopia. A coloboma of the optic nerve was also present, of which he gives a figure. The fundus oculi of all the other cases in which it has been examined has been normal in appearance.

From this account of the additional defects met with, it will be seen that the error of development is by no means a simple one, a point of some importance in view of the various explanations of the syndrome which have been given.

The movements, with which the jerking upwards of the eyelid is connected, have been analysed by Sinclair, who divided them into those with ptosis in which upward movement of the lid occurred with opening the mouth or on lateral movement of the jaw, and those in which it occurred only on lateral movement of the jaw, and those without ptosis, in which these movements were associated.

Pontico, however, who collected some forty cases in 1910, analysed them by the nerve supply of the muscles, with the movements of which the contraction of the levator palpebræ superioris was associated. He found that almost all were associated with those innervated by the motor branch of the fifth, or with movements in which muscles innervated by the sixth and seventh took part. In addition he found cases in which the innervation of the associated muscles was seventh, or the ninth and tenth. It has also occurred

with movements of the tongue, which draws its sole nerve supply from the twelfth or hypoglossal.

The commonest type met with is that in which there is some raising of the lid with ordinary mastication, and extreme raising of it, so as to show a large area of sclerotic above the cornea, with movement of the jaw laterally away from the side of the lesion, thus bringing the external pterygoid into action. If the jaw is held firmly in this position the lid often remains retracted. This is well shown in the photographs given by Snell, Sym, Thomson and Souter, Gaultier and Bucquet, and Lutz. Friedenwald describes a case, which is unique in that lifting of the lid only occurred with lateral movement of the jaw towards the affected side. In the three cases described by Lutz, almost all these associations are represented. In the first the lid was raised on opening the mouth, according to the author, in association with the activity of muscles innervated by the fifth and seventh cranial nerves, the second was similar except that the lid was also raised in association with swallowing, a movement performed by muscles innervated by the ninth and tenth nerve. In the third case it was only associated with the movements of certain muscles supplied by the seventh nerve, chiefly with the risorius and buccinator, and was most noticeable when the patient laughed.

My own case occurred in a baby first seen at six months of age. The infant is a girl, and the movements were first noticed when she was about a month old. It was seen that the right eyelid went up and down as the baby sucked at the breast. The baby is fat and healthy-looking, but there is a slight ptosis of the right upper lid, such that the lid falls as low as the level of the upper edge of the pupil. As far as one can tell in so young a baby, voluntary movement of the levator is good, and also of the other ocular muscles. The pupils are equal and react to light; there is no facial asymmetry, and no difference in size of the tarsal plates. As the baby sucks the right lid is raised synchronously with the movements of the jaw so that a little sclerotic is shown each time above the right cornea. As the jaw is moved away from the side of the lesion, as in grinding the teeth, the lid is raised. An almost imperceptible lateral movement is sufficient. The left lid is not moved, and the right eye itself remains stationary. Slight sucking movements produce no movement of the lid. When the baby yawns or laughs the lid is retracted to an extreme degree and shows a large extent of sclerotic. The movements are diminishing in frequency and in extent. There is no history of a similar condition or of ptosis in the family.

With regard to the etiology of the condition, both sexes appear equally liable. Of fifty-seven in which it is specified, twenty-nine were males and twenty-eight females, but there is a distinct preference for the left side. Twenty-one of these were right-sided and thirty-six left.

With regard to the course of the malady, the evidence is strong that it tends to disappear. In Blok's and von Adamück's cases, the latter acquired, it became worse, but in others it has been observed to diminish as life went on. In Gunn's case there was some recovery from the ptosis and less movement. In Thomson and Souter's the movements decreased, and this also happened in one of Fraenkel's and one of Kraus' cases; in the other case of Kraus, the movements lessened and finally disappeared under observation. That this is the usual course of events may be inferred from the age at which the condition is met with. Of 9 occurring at 5 years or under, two were under one year, between 6 and 10 there were 10 cases; between 1 and 20 there were 22; between 21 and 25, 6, and single cases were met with at 30, 34, 35, 38, 42, 43 and 55 years, the last being an acquired example.

The great number noticed in early adult life is, no doubt, due to the growing regard for personal appearance at that epoch.

It is probable that most cases obtain complete control over these involuntary movements and that in only very few do they persist throughout life.

The condition is evidently, to a certain extent, familial and hereditary, as one would expect, since it is probably merely a special form of congenital ptosis or ophthalmoplegia externa, both of which are, in certain instances, familial, and in others very strongly hereditary.

Vossius met with two brothers with ophthalmoplegia externa and double ptosis, in one of whom there was jaw-winking on one side; Blok met with it in two brothers, aged 17 and 10 years, who had in addition left-sided ptosis. In Fischer's case a boy had it with a right-sided ptosis, and his grandfather is said to have had precisely the same condition. Meyer noticed left-sided ptosis and jaw-winking in a father and daughter, and in Gunn's case the paternal grandfather and all his family are said to have had a slight asymmetry of the lids. Gunn only saw the father and aunt of his case, both of whom had merely a slight fulness of the upper lid on one side and no paresis.

The view of the pathology of the condition most commonly accepted is that originally put forward by the Committee of the

Ophthalmological Society which reported on Marcus Gunn's case. They were of opinion that the cells of that part of the third nerve which supplies the motor fibres to the levator palpebræ superioris were defective and that there was a direct innervation from the motor nucleus of the fifth. With some elaboration to cover recent cases, that is the view put forward by Pontico.

To explain all the facts observed, it is necessary to suppose that in some cases fibres run from the fifth, in others from the fifth and seventh, the seventh alone, or the fifth, seventh, ninth, tenth, and twelfth cranial nerves. But as Bishop Harman has pointed out, the nerve supply of a muscle is one of the most constant features of anatomy, and to find aberrant nerve fibres from nuclei belonging to the large-celled medial somatic group of nuclei such as the twelfth and from the small-celled efferent splanchnic group such as the ninth and tenth and also from the large-celled lateral somatic group such as the motor root of the fifth, all supplying a muscle usually innervated by cells of a nucleus belonging to the first-named group, would be too unlikely to make it a reasonable working hypothesis. Nor would this explain how recovery takes place, nor how the condition can be acquired in later life.

Bishop Harman's own explanation is that it is an atavistic phenomenon, the revival of an old and long-associated movement, which in normal man is suppressed by the exact balance of action existing between the orbicularis and the levator. He says that in the fish, when the mouth is opened the spiracle dilates, or in other words the superficial muscle of the branchial arch relaxes as the deep contracts. In man the superficial is now represented by the orbicularis and the deep by the pterygoids. The unilaterality of the condition he explains by supposing that a weak levator takes advantage of the relaxation of the more powerful orbicularis. One would, however, expect an atavistic phenomenon to be bilateral and in case of a difference in strength of the two levators, surely the stronger one should produce the greater contraction when released from its antagonist.

Others, amongst whom are Bull and Helfreich, suppose the condition to be due to an exaggeration of normal associated movements. This, I think, is a part of the truth, but not the whole. It does not explain the unilateral character of the lesion or its frequent co-existence with ptosis and other abnormalities.

I suggest that a more probable cause of the phenomenon is that there is in these cases a defect of the whole motor path for the movement of the upper lid, or at any rate of that part above the

nucleus of the third nerve. This condition is probably due to a defective or arrested development. It is clear that, if we reject Pontico's explanation, many of the nuclear cells must be intact even when ptosis and loss of voluntary movement are most complete, since raising of the lid can occur to its fullest extent in association with jaw movements. In congenital ptosis and in ophthalmoplegia externa, we know that the cells of the oculomotor nuclei are diminished in number, or absent, and Kann considers that there is also a defect of the tracts from the cortex in these cases. The frequency of ptosis and paralysis of ocular muscles in connection with the jaw-winking phenomenon, suggests that it is connected with these conditions, and this receives strong confirmation from the case reported by Vossius. He met with two brothers, aged 21 and 18, who had double ptosis and complete ophthalmoplegia externa, and in addition the younger had associated movements of the upper lid and jaw on one side only. The essential part of the lesion, therefore, is probably one of incomplete development of motor and inhibitory fibres from the motor cortex to the nucleus of the third nerve, or that part of it which supplies the levator palpebræ superioris, whereas in the commoner cases of congenital ptosis the defect is one chiefly affecting the nucleus itself or the parts below the nucleus.

A defect of this nature would explain the co-existence of complete ptosis and intact nuclear cells.

It is necessary now to explain how the paradoxical contraction of the levator occurs.

It is well known that in some cases, especially in babies and children, the eyelids are raised while sucking or masticating food, or while yawning. This proves that normally there is a path of association between the higher centres controlling these two movements. This is confirmed by the fact that when children suffering from photophobia open their eyes the mouth is frequently opened also.

A pathological example of this last associated movement is afforded by a case reported by Beaumont. A child, aged two-and-a-half, with complete double ptosis, used to open her mouth whenever she tried to raise her lids. The ptosis was cured by operation, and the associated movement ceased.

If we suppose that voluntary control of the levator palpebræ superioris is largely or completely lost, it is easy to understand that impulses passing along this track between the centres for eye movement and those for jaw movement would have free play, and that the lid might be raised with each movement of the jaw. The more

this path became used the more certainly would the paradoxical movement of the eyelid take place.

If careful observation were made in a large number of children, we should probably meet with cases in which slight raising of the lid occurred with swallowing, or protruding the tongue, and there is probably an association between the centres for these movements and that for raising the lids, similar to that between the centres for jaw movements and lid movements. With age it is not unreasonable to suppose that less direct tracts for impulses may be opened up and used, and that voluntary control over the lid may be obtained, or at any rate sufficient control, to make it possible to inhibit the raising of the lid. This view of the pathology of the condition offers an explanation for the movement being usually unilateral, for its presence with or without ptosis, and for its disappearance.

Sydney Stephenson describes a case unique up to the present. This was a boy, who had left ptosis, but the lid movement occurred on the opposite side, the right, with chewing, and on lateral movement of the jaw. The case must be regarded as a bilateral one, in which the defect of the development fell more on the motor track from the cortex to the nucleus, or on the nucleus itself, on the left, and on the inhibitory fibres from the cortex on the right side. It is worth noting that this child had a remarkable physiognomy, and a deep depression of the skull behind the frontal bone, facts which seem to point to more than a small local error of development.

It also offers a reason for the improvement in the ptosis seen in two cases. It will also explain those rare cases in which the phenomenon has been acquired.

They are doubtless due to the same condition, which must have been present at birth, a view strengthened by the presence of congenital ptosis in those of Blok and others.

We must suppose that in these the association fibres between the higher centres for jaw movement and lid movement were not used at first. Probably some powerful cause operated to make the first impulse pass along, and once opened up the path became used with regularity, the path for inhibitory impulses being weak or absent.

In Gauthier and Bucquet's case the associated movements definitely began with the removal of a tooth, and continued afterwards with increasing regularity. In the others no definite cause for the commencement of the associated movements has been recorded, but there was probably some unusual stimulus, which made plain the latent defect of development.

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Royal Society of Medicine.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Friday, April the 24th, 1914.

The President, DR. LEONARD GUTHRIE, in the Chair.

Amyotonia Congenita.—Dr. H. MORLEY FLETCHER showed a boy, aged 3 years, with this condition.

Arthritis of the Left Shoulder-joint following Pulmonary Diseases.—Mr. A. E. MORTIMER WOOLF. A boy, aged 8 years, was treated for fibroid disease of the lung of tuberculous origin from April, 1911, to June, 1913. He then developed pain in the left shoulder-joint with limitation of movement and slight wasting of the deltoid. A skiagram of the thorax showed shadows suggestive of lung disease and calcareous glands, and a skiagram of the shoulder showed caries of the head of the humerus. Complete recovery followed the application of a splint and the administration of tuberculin.

Case of Mongolian Blue Spots.—Dr. E. A. Cockayne showed a child, aged 11 months, whose parents were Jews. The spots were first seen at the age of 9 weeks. They were of a slaty-blue colour, and unaltered by pressure. There were three very large ones on the lower part of the back and on the left flank, two on the right shoulder, and one just below the left deltoid.

Cubitus Varus following Fracture of Lower End of Humerus.—Mr. PHILIP TURNER showed a girl, aged 13 years, with this condition, which was treated by osteotomy of the humerus above the condyles, followed at the end of two weeks by massage and passive movements. The deformity was cured and there was great improvement in the function of the arm.

Syphilitic Cirrhosis of the Liver; Ascites; Talma-Morison Operation; Arthritis of the Knee.—Mr. PHILIP TURNER.—The patient was a boy, aged 7 years. The operation was followed by a considerable collection of fluid in the peritoneal cavity, requiring paracentesis, but the fluid had not re-collected and the general condition had considerably improved.

Pneumonia and Encephalitis Cerebelli.—Dr. LEONARD GUTHRIE.—A boy, aged 2½ years, was admitted to hospital for convulsions and left

basic pneumonia. One severe and several minor attacks of generalised convulsions occurred after admission, and then the fits ceased, but the child remained in an irritable semi-conscious condition for over a fortnight. The cerebro-spinal fluid showed some hypertension, but was clear and sterile, and had no excess of albumin or cells. The pneumonia gradually cleared up and the intelligence improved. Signs of cerebellar incompetence then appeared. There were inability to stand or maintain equilibrium when sitting, general weakness and hypo-tonous of muscles of limbs, marked intention tremors, and ataxy on voluntary movement, especially of the right upper extremity. Gradual improvement occurred, but the child still cannot stand without support and is unable to speak.

Case of Enlargement of the Spleen.—Dr. R. A. CHISHOLM and Dr. E. BELLINGHAM SMITH showed a boy, aged 2 years, with an enlarged liver and spleen, and positive Wassermann's reaction. The question was whether it was a case of splenic enlargement with cirrhotic changes in the liver requiring splenectomy, or a case of splenomegaly due to congenital syphilis.

Partial Paralysis of the Abdominal Muscles due to Infantile Paralysis.—Dr. E. BELLINGHAM SMITH showed a boy, aged 7 years, with a distinct ballooning of the whole of the upper third of the abdominal wall, apparently due to a bilateral symmetrical paresis of the muscles in this area.

The reflexes over the upper one-third of the abdomen were absent, but were present in the lower two-thirds. The chest moved very little during expiration and inspiration, and there was evident inter-costal paralysis. There was also paralysis of the left deltoid.

Benzol in the Treatment of Lymphatic Leucæmia.—Dr. J. N. MACBEAN ROSS.—The case had been previously only shown to the section (*vide* BRITISH JOURNAL OF CHILDREN'S DISEASES, January, 1914, xi, p. 173). During the treatment there was a progressive diminution in the total leucocyte count, and the patient seemed to be greatly improved generally, though the spleen remained enlarged and the glandular enlargement did not become less. After the benzol was stopped on February the 12th, the leucocyte count was taken weekly, and at one time was as low as 2900. On April the 2nd he was re-admitted to hospital. The lymphatic glands were distinctly harder and larger, the general condition was worse, and the total leucocyte count had risen to 123,000. Benzol, m v per diem was given, and in ten days the count had fallen to 15,000 and there was general improvement in his condition.

Bilateral Hare-lip without Cleft Palate, and also Congenital Bilateral Mucous Fistulæ in the Lower Lip.—Mr. ALAN H. TODD showed a male infant, aged 3 months, with this condition. The upper lip showed a wide bilateral cleft, with marked projection of the premaxilla, but there was no cleft palate. The lower lip showed two small depressions, each $\frac{1}{8}$ in. from the mid-line.

The following papers were read: **Auricular Flutter in Acute Carditis**—Dr. G. A. SUTHERLAND (*vide* page 337).

Case of Acute Partial Heart Block.—Dr. A. HOPE GOSSE.—A boy who had frequently suffered from sore throat was admitted to hospital

with rheumatic pericarditis at the age of ten years. Next year he was in hospital again with acute rheumatism for two months, and two months later he was admitted again for increasing præcordial pain. The jugular tracings showed that he had a normal "a-c" interval on admission. This interval increased to over one-fifth of a second in about a fortnight, and three weeks after admission the dropped beats occurred, associated with an "a-c" interval of two-fifths of a second. The dropped beats occurred on two consecutive days, and then the "a-c" interval gradually diminished.

On one of the days of the dropped beats he had an attack of most severe præcordial pain, during which he became cyanosed, had distress in breathing, and a small pulse.

Philadelphia Pediatric Society.

May the 5th, 1914, WILLIAM N. BRADLEY, M.D., President.

SPECIAL PUBLIC MEETING UPON THE VALUE OF ANIMAL EXPERIMENTATION IN THE DISEASES OF CHILDREN.

The Value of Animal Experimentation in the Diagnosis of Disease in Children.—Dr. ALFRED HAND, jun., read this paper. He emphasised the importance of diagnosis, for without exact diagnosis, treatment could not be scientific. With the development of bacteriology and the discovery that germs were associated with infectious diseases, a need arose for standards to determine the true relations between them, and Koch formulated certain postulates. These had been fulfilled in about half of the infectious diseases, yet much work remained to be done. The Widal test in typhoid fever, discovered through animal experimentation, was of great value; in the small group of cases in which it might be negative, bacilli could be isolated from the blood or discharges and identified by agglutinins obtained from animals. The diagnosis of meningitis depended on lumbar puncture; in the tuberculous form it might be necessary to inject fluid into guinea-pigs. This test was also used for enlarged glands in the neck, pleurisy with effusion, kidney conditions, and in the study of milk to determine the presence of tubercle bacilli. Much of our knowledge of tuberculosis resulted from animal experimentation, even the von Pirquet cutaneous tuberculin test. If specific treatment were ever obtained, it would be through animal experimentation. So important was the study of throat cultures in the diagnosis of diphtheria that municipal and state governments furnished facilities for this; and at times culture tests were made upon guinea-pigs to test the virulence. Dr. Hand described two cases of rabies, in which the diagnosis was established by autopsy and experiments upon rabbits. Syphilis had a high mortality in children, and accurate diagnosis was of great importance. The Wassermann test, recently discovered, placed the diagnosis on an exact scientific basis, and used a lower animal. The claim made by anti-vivisectionists that animal experimentation accomplished nothing had been shown to be false; now they opposed vivisection upon so-called morality. For the sustenance of the body, it was necessary to consume some of the lower animals, and for the health of the body some of the lower animals were needed to furnish us with defences against sickness; was there any difference between these?

Société de Pédiatrie, Paris.

April the 7th, 1914. (Bulletin No. 4.)

Infantile Hemiplegia in a Congenital Syphilitic.—MM. BABONNEIX and TIXIER reported the case of a boy, aged $3\frac{1}{2}$ years, who had an ordinary infantile hemiplegia with arrest of development of the left side, athetoso-choreic movements, exaggerated reflexes, and slight mental derangement. Wassermann's reaction was positive in the child, but negative in the mother. The father, who was dead, had received mercurial treatment while in the army.

Acquired Dextrocardia and Infantilism of Tubercular Origin.—M. VARIOT and MME. CHATELIN showed a boy, aged 15 years, with this condition. The dextrocardia was obviously acquired; the presence of the liver on the right side and the absence of inversion of the viscera eliminated a congenital condition and the normal direction of the heart's axis supported this view.

The Diagnosis of Anencephaly by the Transparency of the Skull.—M. CHATELIN showed two children with spastic rigidity of cerebral origin, one with obvious hydrocephalus, the other without any appreciable modification of the skull. Both were diagnosed as anencephalic. The method was simple; all that was necessary was to place the child's head before a sufficiently powerful electric light so that the cranial cavity was illuminated to its whole extent.

Two Cases of Hypoalimentation successfully treated by Hyper-saccharated Milk.—MM. VARIOT and GRANDJEAN. Both cases showed a condition similar to true athrepsia. There was no diarrhoea but a spurious constipation, with vomiting and gastric dilatation. All the symptoms disappeared on giving a sufficient ration. The speakers gave one-fifth of the body-weight and drew attention to the dissociation between the increase in weight and height. One case was 58 cm. high for 3 kilogs weight and had only gained 1 cm. in a month, while he increased 1100 grams, a height of 58 cm. corresponding to about 5 kilogs weight. The other case, on the contrary, was only 53 cm. high, scarcely the height of a child a month old. As soon as he reached the weight of a child this age the height increased rapidly like the weight, and the child gained 3.5 cm. in a month and a half.

Gonococcal Ophthalmia cured by Nicolle's Vaccine.—MM. CASSOUTE and ROCHE related a case in which a severe purulent conjunctivitis was cured in forty-eight hours by this method.

Separation of the Epiphysis before the appearance of centres of Ossification.—M. LANCE showed two cases, aged 18 months and 12 years, with this condition of the wrist and elbow respectively. The only cutaneous signs were those of a movable fragment and crepitation. These lesions caused very little disturbance, there were no ecchymosis, little swelling and partial movement.

A New Spiroscope.—M. LANCE.

Infantile Scurvy in a child of 4 years brought up on Homogenised Milk.—MM. SCHREIDER and FRANÇOIS related this case of Barlow's disease which is very rare after two years of age, as children's food is more varied than that of nurslings. Lepelletier milk had been used since birth.

Noguchi's Luetin Reaction in Infantile Syphilis.—MM. BLECHMANN and DELORT read a preliminary note on this subject. A positive reaction may occur in three ways: (1) after twenty-four hours a red papule is observed, which becomes rapidly hard; in about three to five days a pustule is formed, which either dries up quickly or increases and becomes covered with a necrotic scab; (2) the reaction may stop at the papular stage. Whilst in the preceding case the reaction matures in twelve to twenty days, in the second case it is very variable; it may disappear in a week without leaving any trace or persist as an appreciable induration for over a month; (3) the speakers had not actually observed in children an example of the so-called "torpid" reaction described by Noguchi which only occurs after an interval of fifteen or twenty days.

Lengthening of the Lower Limb in Tuberculosis of the Knee.—MM. SAVARIAUD and RÖDERER described three cases of white swelling of the knee of a benign type, little marked, and never suppurating. They had been treated by immobilisation. One had had an injection of chloride of zinc, the other injections of thymol and gomenol and the third no injection.

Demonstration of Pantograph.—M. COURTADE showed an instrument of this name for measuring the thorax. VINCENT DICKINSON.

Abstracts from Current Literature.

Medicine.

Some observations on infant feeding (*Arch. of Pediat.*, 1913, xxx, p. 762).—H. RULISON advocates dilution of whole milk with water, to which is added from one to three carbohydrates, including one form of sugar. The energy quotient of 100 calories per kilo of body weight, diminishing to about 70 at the end of the first year, has worked well. Feeds should be administered once every four hours, as cow's milk mixtures seldom leave the stomach in less than two and a half to three hours. Higher percentages of proteid are advocated. The author begins with 1.33 to 2 per cent., and increases up to 3 or 4 per cent. by the end of the first year. Maltose is the most assimilable and the least fermentable of the carbohydrates, but it has a laxative effect, and many infants tire of it and lose their appetite. Good results are also obtained with cane sugar. Hass has recently demonstrated the presence of amylase during the early weeks of life, and Brady has recently advocated polycarbohydrate feeding. In diarrhoea sugar and barley water should be withdrawn. With regard to fats, many infants cannot properly metabolize even moderate percentages. The author finds that fat in a mixture will more often need reduction than increase after 2 per cent. has been reached.

CHRISTOPHER ROLLESTON.

Some physiological principles concerned in the nutrition of infants ('*Practitioner*,' 1914, xcii, p. 41).—**E. Pritchard** says that the resolution of foreign proteins into their component elements, or amino acids is of great importance in infancy, for unless foreign proteins can be so resolved in the process of digestion, they cannot be utilised for compounding the specific proteins which are essential for the child's nutrition. It is dangerous to supply the new-born infant with any variety of foreign proteid, unless the digestive functions are established. A great number of the troubles of the digestion and nutrition in infants and children are due to the improper administration of cow's milk before the gastric and pancreatic functions have been developed.

F. R. B. ATKINSON.

Nutritional disorders in infancy ('*Medical Press*,' 1913, ii, p. 550).—**Eric Pritchard**, in a clinical lecture, discusses what should be implied in such a term as "good nutrition." He adduces relative over-feeding as the cause of most of the troubles of infancy, and regards it as the main ætiological factor in the production of rickets. He pays some attention to the difficulties of deciding on the exact amount of milk necessary to an infant in varying circumstances.

REGINALD MILLER.

Infant feeding and the examination of stools ('*Arch of Ped.*,' 1913, xxx, p. 244).—**F. B. Talbot** considers that in cases of indigestion in infants an examination of the stools will show what component of the dietary is at fault. In fat indigestion the stools show soft curds, while the fæces may become soapy or even oily. In carbohydrate indigestion the stools are acid and scalding, may be feathery or bubbly, while the starch in them will turn blue with Gram's stain. In protein indigestion tough curds are found in the stools.

REGINALD MILLER.

On avoidable difficulties in the hand-feeding of infants ('*Brit. Med. Journ.*,' 1913, i, p. 1263).—**Eustace Smith** maintains that many gastro-intestinal disorders in infants originate in a chill, the result of undue exposure. He formulates three simple rules for the hand-feeding of infants: (1) Take care that the infant is bathed as quickly as possible in hot water, and that his feet and legs are never allowed to get cold. (2) See that a sufficient variety of flavour is contained in the several meals. (3) See that the feeding apparatus is absolutely clean, the food fresh, and the sanitary arrangements generally in good order.

J. ALLAN.

Normal weaning ('*Journ. de Méd. de Paris*,' 1913, xxxiii, p. 1015).—**A. Moussous** and **E. Leuret**.—Weaning should be a gradual process to make sure that the new foods are well tolerated by the infant. It should terminate between the twelfth and fifteenth month in the case of a healthy infant with a good nurse, and should begin between the eighth and ninth month. It should, if possible, not be commenced during the hot months. The proportions of food should be: water, 65; albumen, 23; fats, 7; salts, 5. The amount of albumin equivalent to a quarter of the daily increase of weight of the child should be given, as without this new tissues cannot be formed. The ration should contain the energy necessary for the work of the body and for the maintenance of the body heat. The amount of albumen should be 1.36 per kilo of body weight at seven months, and 1.16 at twelve months. The first feeds should be of 100 grms. of milk with 5 grms. of powder of Indian corn or barley, and 5 grms. of sugar.

this gives about 120 calories, if this is not well borne, rice or arrowroot may be substituted, after a fortnight this may be given twice daily instead of breast feeding. Next it should be thickened with further farinaceous additions, and by the tenth or eleventh month another 50 grms. of milk may be added; and the starchy food may be varied and bread panada given, also rusks, biscuits and crusts of bread. By twelve months of age the breast-feeding may be entirely given up and feeds of 200 grms. of milk with 20 grms. of farinaceous food given. Then eggs, potato *purée* and bread and butter may be tried. Each time a further addition is made to the diet care should be taken that the digestion is properly carried out.

J. PORTER PARKINSON.

Intolerance of breast-feeding in an infant (*Jour de Méd. de Bordeaux*, 1913, LXXXIV, p. 645).—**Lefour** and **Balard** give the details of the breast-feeding of an infant under close observation, where there was a lack of improvement and vomiting with this feeding. Other cases are also mentioned in the discussion following the paper.

REGINALD MILLER.

Unusual type of acid intoxication in infants (*Am. Journ. Med. Sci.*, 1914, CXLVII, p. 86).—**I. A. Abt** describes a series of cases of acid intoxication occurring in previously robust infants at about the end of the period of breast-feeding. Usually a fatal termination ensued in about five days. In one family two children had died in this way and a third suffered but recovered. The author differentiates his cases from cyclic vomiting owing to the vomiting being much less severe and persistent than in typical examples of that malady.

REGINALD MILLER.

The modification of cow's milk for infant feeding (*Med. Press*, 1913, II, p. 196).—**D. M. Barcroft** states that in his experience the successful treatment of infantile indigestion demands a most careful modification of the casein content of the milk, and this is best accomplished by means of lactalbumin. The method is the only physiological one, because it has been shown that the digestibility of the casein of human milk is due to the influence exerted on it by the large amount of lactalbumin it contains. This accounts for the softness and flocculence of the casein curds yielded by cow's milk to which lactalbumin is added.

J. ALLAN.

The preparation of albumin milk (*Journ. Amer. Med. Assoc.*, 1913, LXI, p. 1810).—**J. M. Brady** gives the following directions for preparing albumin milk: Bring a quart of sweet whole milk to the boiling point; raw milk is not used, as its curd is much tougher. Cool to 100° F. Add one table-spoonful essence of pepsin and allow to curdle. Pour off the whey and suspend curds in muslin bag two hours. Stand bag containing curds in 8 oz. boiled cool water for one hour. This is very important and is the secret of success. Remove the bag from the water, allow as much water to drip as will, and place curds in sieve. Add pint of fat-free buttermilk to sieve containing curds and stir; it will be found that the curds will pass through in two to three minutes. This must be repeated three or four times. Turn the bag inside out and return to the 8 oz. of water so as to obtain all the curds. Pour in the sieve the 8 oz. of water which was used to soak the curds. Add enough water so that the whole measures a quart. Add the percentage of maltose-dextrine desired and put on ice.

T. R. WHIPHAM.

Dried milk in infant feeding (*'Echo Méd. du Nord,'* 1913, xvii, p. 365).—**Deléarde** says that the use of dried milk dates from Newton's time. It is prepared by subjecting the fluid to a temperature of about 100° C. A yellowish-white powder results which can be preserved for many months if kept from damp. It is sold in three varieties according to the condition of the milk as regards cream: (a) all cream removed; (b) half the cream removed; (c) whole milk. The important constituents are not markedly altered, but if carelessly prepared the lactose may be converted to caramel, and in any case the various ferments are destroyed. If the milk be sour a good powder is not produced. The acidity of the milk should never be neutralised by the addition of sodium bicarbonate. This method of administering milk is very useful in cases of marasmus and diarrhœa, and cases of gastric vomiting can be kept under control by giving the powder in the form of a paste and a sufficiency of water subcutaneously. In acute gastritis after the administration of dried milk the temperature drops and the stools become normal. Its other advantages are summarised as follows: (1) Limitation of the amount of fluid ingested, and consequently no distension of the gut or fœtid stools. (2) Destruction of pathogenic germs and impossibility of any that may be present developing owing to lack of water. (3) Economy: a baby of six weeks old, can be fed for twopence a day. (4) Ease of distribution: Enough can be given to a family to last a week, thus saving the labour and expense of the ordinary milk depôt. To infants a day old, half a teaspoonful of no cream powder and 10 grms. of water are given in each of seven bottles, the amount of water is increased daily by 5 grms. until forty are taken. From the eighth to fifteenth day, one teaspoonful of powder is used, then two, and by the end of the first month one teaspoonful of skim and one of half cream powder are added to each bottle. The latter is increased by two tablespoonfuls a month. A teaspoonful of sugar is added to each bottle. Whole milk powder is given at six months.

CHRISTOPHER ROLLESTON.

Dried milk in the nutrition of the normal and ailing infant (*'Arch. de méd. des enf.,'* 1913, xvi, p. 401).—**Bonnamour** insists on the necessity of commencing with a milk powder from which all the cream has been removed, and as the gastro-intestinal disturbance diminishes gradually restoring the cream. In only five cases in seven years has he met with failure. These were cases of obstinate vomiting. In two the vomiting ceased when wet nursing started. In another there was spasm of the pylorus. The others were perhaps due to maternal incompetence. Only three deaths occurred, one from meningitis, one from pneumonia, and the other from a dental abscess presumably setting up a septicæmia. In no case was any gastro-intestinal disturbance started. Each feed must be prepared separately; almost boiling water must be used. Up to six months half the cream is removed from the milk; afterwards whole milk is used. The following amounts of dried milk and water are recommended for each feed: During the first two weeks, one soup spoonful of powder to three of water; at the end of two months, two of powder and six of water; at the end of four months, three of powder and eight or nine of water; at the age of a year, four spoonfuls of powder to ten or twelve of water. A litre of milk contains 125 gm. of powder, and a soup spoonful contains 5.5 gm. A litre of milk therefore contains 32.7 spoonfuls, as a litre of milk weighs 1030 gm. Each spoonful will contain 45 gm. of milk. During the first fortnight the infant receives 315 gm. of milk a day; at the end of the

second month 630 grm.; at six months 945 grm.; and at twelve months 945 grm.

CHRISTOPHER ROLLESTON.

The comparative value of various sugars in infant feeding (*Arch. of Ped.*, 1913, xxx, p. 572).—**C. Haskell** refers here only to sick infants. A number of infants were fed on various sugars, and the proportion gaining weight, showing a general improvement and an improvement in the condition of the stools was noted. The groups of cases were six, which were given lactose, saccharose, 80 per cent. maltose, maltose, dextri-maltose, and malt soup extract, respectively. A comparison of these groups led the author to a conclusion in favour of the malt soup extract.

REGINALD MILLER.

The effects of hypersaccharated milk (*La Clin. infant.*, 1913, xi, p. 725).—**MM. Variot and Lavalie** have continued their study of sweetened condensed milk and communicated the results to the Académie des Sciences November 24. They inquired whether the antiemetic properties of such milk were due (1) to some chemical modification brought about by the condensation itself, (2) to a combination of the added with one of the normal constituents of the milk especially with the casein, and (3) to the free cane-sugar contained in the milk. They found (1) that the sugar did not enter into any combination with the casein, but remained free, even after over-heating, (2) that the casein molecule was not split up more in the presence of sugar than without it, (3) that the modification of the casein was due to the over-heating only, (4) that the antiemetic and eupeptic properties of such milk were exclusively due to the presence of sugar and to the mode of preparation, (5) that the special properties of sweetened condensed milk were due simply to the over-sweetening; by adding to homogenised milk saccharose in the same quantity as that contained in condensed milk, viz. 10 per cent., the results furnished by this sweetened non-condensed milk heated to 108° C. were exactly the same as those obtained by condensed milk, i. e. arrest of vomiting, regularisation of the gastro-intestinal functions and rapid increase of weight and height.

VINCENT DICKINSON.

Indications and contra-indications for the use of fermented milk in diseases of children (*La Pediatria*, 1913, xxi, pp. 291 and 413).—**G. Cacace** gives an exhaustive article on this subject having experimented with all kinds of fermented milk. Their greatest use is in digestive disorders owing to the antagonism between the lactic bacteria and those of the intestinal flora. They are also indicated for their nutritive value in constitutional affections and general disturbances of nutrition, as in certain dermatoses, especially in those dependent on intestinal intoxication. Contra-indications are few and limited to those cases in which lactic acid, alcohol, and carbon dioxide are contra-indicated. Fermented milk, although having a definite nutritive value, cannot be administered continuously to infants and therefore cannot be considered as a true substitute for ordinary milk. The quantity of fermentation products, according to the author's chemical analysis, increases in kephir and koumiss in direct proportion to the duration of the fermentation. The most beneficial and constant therapeutic action in intestinal affections of children is to be found in strong kephir.

VINCENT DICKINSON.

"Whey modified milk" in infant feeding (*Arch. of Ped.*, 1914, xxxi, p. 20).—**J. S. Leopold** reports his experiences of the use of Schloss's "whey

modified milk," the formulas for which were published in 1912. The chief point in the dietary is the attention paid to the percentage of salts in the mixture. Leopold obtained good results in the feeding of a series of institutional infants under the age of six months; but in those over this age he found that better progress was made on a simple milk mixture.

REGINALD MILLER.

Contribution to the chemical investigation of the casein of cow's milk (*La Clin. infant.*, 1913, XI, p. 518).—MM. Lavalie and Longevialle examining the chemistry of casein in its three states, namely, in suspension, colloidal state, and in solution, find that under the influence of heat in the presence of water, it undergoes important and marked changes. Scalding to 108°–110° C. has peculiarly powerful action, diminution of levo-rotatory power, and tendency for the albuminoid molecule to disintegrate. These changes are not affected by the presence of sugar. The authors could not obtain any combination between the sugar and the casein. The action of heat on casein simply dissolved in sweetened or unsweetened water increased its levo-rotatory power, but when dissolved by means of sodium or ammonium carbonate it was diminished.

VINCENT DICKINSON.

Why sodium citrate prevents curdling of milk by rennin (*Amer. Journ. Dis. Child.*, 1914, VII, p. 298).—A. Bosworth and L. Van Slyke state that casein is a protein combining with metals or bases to form caseinates. It exists in milk in combination with calcium, probably as tetra- or tri-calcium caseinate. Rennin converts calcium caseinate into calcium para-caseinate, a less soluble substance, which is precipitated, or in other words the milk curdles. If, however, excess of a soluble sodium salt, *e. g.* citrate, be added the insoluble calcium para-caseinate is converted into soluble sodium para-caseinate, and calcium citrate in excess is found in the filtrate. The larger the amount of sodium citrate added, the larger was the amount of soluble calcium found in the filtrate; the longer did the milk take to curdle, and the softer did the curd become, until with 0.520 grms. of sodium citrate no clot was formed.

CHRISTOPHER ROLLESTON.

Injuries produced by starch (*Journ. Amer. Med. Assoc.*, 1913, LXI, p. 1275).—I. A. Abt states that the condition known to the Germans as "mehlnährschaden," or starch injuries, seems to be little known in America. Czerny and Keller point out that starch in proper dosage is not injurious to the infant's organism. It has been suggested that nitrogen is better retained if small quantities of starch are added to the food. If it be given in excessive quantities for an extended period of time, particularly if it be used without the addition of milk, it may lead to disastrous results. The condition arises in young infants who are fed with starch preparations without the addition of milk. More frequently it is seen in infants who have suffered from a gastro-intestinal disturbance and for whom the physician has ordered a starch water, either barley or rice, or oatmeal, and when this has been continued without the addition of milk, usually without the knowledge of the physician, for a long period. The pathological condition which results from overfeeding of starch is due probably to an actual food deprivation measured in calories. The starvation is particularly due to the insufficiency of protein, fat, and salts in the diet. The salts contained in the starch food, as well as the starch itself, tend at times to combine with water in the tissues, leading to water retention. This causes the infant to

appear plump, though pasty and pale. In the meantime, the normal production of antibodies in the organism is diminished and the resistance of the infant against infection is lowered, and secondary infections are likely to occur. Dyspeptic conditions with diarrhoea and loss in weight result. If the condition of inanition continues for some time, fermentation and inflammation and loss of function of the alimentary tract are inevitable. The disease presents itself in three main types. (1) In cases in which there is a deficiency of salt without retention of water, complicated by diarrhoea, the atrophic type presents. The muscles are hypertonic, the tissues dry, the skin and mucous surfaces are pale and the abdomen is distended. (2) The hydræmic type occurs most frequently in cases in which salt is added to the starch preparations, or in which a small quantity of milk is used in the food. These children remain stationary or increase in weight; sometimes the increase is enormous. If considerable milk is added to the diet at this point, the infants lose rapidly in weight. If the starch diet is resumed an increase in weight occurs. Gradually they present an œdematous, pasty appearance, due in part to retention of water, and in part to accumulation of subcutaneous fat. The musculature is doughy on palpation; the abdominal wall and lower limbs become œdematous, not due to nephritis, but to a condition of simple hydræmia. Owing to the diminution of the natural immunity the infant is predisposed to infections, such as bronchopneumonia, pharyngitis, otitis, abscesses and phlegmons. Czerny mentions that xerosis of the conjunctiva and cornea with sequelæ are not infrequent and the condition usually indicates a fatal termination. (3) The hypertonic form is the most infrequent type. The muscles become rigidly contracted and are stiff and board-like. On account of this condition the spine is like a rigid tube, the occiput is bent backward and is bored deeply into the pillow, the arms and legs are adducted, the forearms are flexed at the elbow and the joints offer resistance to passive motion. In the severe types rigidity is so marked that the patient appears like one in catalepsy. Galvanic excitability with pronounced symptoms of tetany may be elicited. The bowel movements are usually yellowish-brown and formed, and frequently show starch with the iodine test. In the severe cases in which fermentation has occurred the stools may become thin with a penetrating sour odour. The dangers resulting from starch injury are most frequent in young infants. Starch can be digested by young babies, but only in small quantity. The greatest danger exists on account of the loss of the natural immunity and lowered resistance, rendering infections more possible. The atrophic form seems most amenable to treatment and offers the best prognosis. The treatment consists in the administration of milk containing a moderate quantity of fat. Carbohydrate food, such as buttermilk mixtures, malt soup, and cereal decoctions should be avoided. Best of all is breast-milk. Even with the use of breast-milk one should consider the damaged tolerance of the organism and small quantities frequently repeated should be administered: first, 2 oz., 6 oz., 10 oz. per day increasing gradually. Even with the use of breast-milk the cure will not be rapid. There may at first be loss of weight. The period of repair may be protracted, the damaged normal immunity may be slow to return and the use of the breast-milk should be persisted in for a considerable period, at least until the patient shows increase in weight. If breast-milk is not available, it has been suggested to use small quantities of undiluted cow's milk, 1 to 2 oz. per day, gradually increasing to 3 oz. and eventually to 6 oz.; finally by gradual increase to 10 or 12 oz. The deficient quantity of water in the food may be

counterbalanced by giving tea or water sweetened with saccharine. Or the milk may be used diluted with water, small quantities being frequently repeated. In some cases top-milk mixtures might be indicated, though the infant's tolerance for fat should not be exceeded. The author gives two illustrative cases from his own practice.

T. R. WHIPHAM.

The public and professional confidence in certified milk (*Arch. of Pediat.*, 1913, xxx, p. 774).—**M. J. Synnott** states that the first certified milk dairy was established by Mr. Henry J. Coit, in 1892, and since then nearly 100 have been established. The cows should be tested at regular intervals by tuberculin, and bacteriological examinations of the milk should be of frequent occurrence. The employees should be vaccinated against smallpox and typhoid fever, and carriers of the latter and of venereal diseases should be excluded. Ample bathing facilities, the use of which should be compulsory, and well-ventilated sleeping rooms should be provided.

CHRISTOPHER ROLLESTON.

Alimentation of the infant (*Ann. de Med. et. Chir. inf.*, 1914, xviii, p. 343).—**Nobécourt** and **Darré** give the composition of goats' milk as butter 48, lactose 47, casein and albumens 37, salts 8, but the composition varies much, the milk of the Malta goat being richer in fats than that of the goat of the Alps. It is said that the goat is rarely tubercular; that is true when it is kept in the open, but in a stable it may contract tubercle from the cow. The milk should be boiled. The composition of asses' milk is nearer that of human milk, and is as follows: Lactose 63, butter 11, casein 19, salts 4.58. The fat being deficient, and so its alimentary value being only a third of human milk, asses' milk is only useful in the first few days of life, or in certain diseases. It is very expensive. Comparing natural with artificial food, all indications are in favour of natural food: the general condition, the normal appearance of the stools, the increase of weight and absence of dyspeptic troubles.

J. PORTER PARKINSON.

The fæces of the infant (*Journ. de Méd. de Paris*, 1914, xxxiv, p. 367).—**Nobécourt** divides the stools occurring in gastro-intestinal disease into those formed of the residues of food, those not containing food residue, and mixed stools. (1) Stools formed of food residues. Badly digested stools may be of variable colour, golden, yellow ochre, grey or white. The consistence is not uniform and the odour is strong, sour or foetid. Diarrhoeic stools are more or less liquid and mixed with gas; the colour is often green and the odour acid or ammoniacal or fishy. Constipated stools may be small, dry and friable, or large and pasty; often covered with mucus. The colour varies. The stools may contain muscle fibres, *débris* of potatoes, or bread, or vegetables and fruits; there are often curds and flakes of mucus. (2) Stools without food residues. These may be serous and consist of a green or yellow liquid with mucus, or colourless with grains like rice, or they may be glairy with mucus containing blood. (3) The mixed stools have residues of food, blood and mucus. The normal stools of an infant at the breast are slightly acid, but a bottle-fed child has alkaline stools; in gastro-intestinal disease the stools vary, green stools being generally acid and the others variable. Normal stools give a negative biuret reaction, but in digestive troubles the reaction may be positive from albuminoses and peptones. Blood may be only discernible by the phenol-

phthalein test. Fehling's reaction for sugar should be negative. Microscopically no cells should be seen, but there may be fat globules and fatty acid crystals in small amount, which are increased in disease. Large flakes consist of a nucleus of nucleo-albumin or casein surrounded by fat. Starch should not appear in the stools. Stools containing much carbohydrate are brown, soft and spongy from gas, they are acid and rapidly putrify; this appearance is characteristic. Casein stools are pale yellow or grey, not foetid and alkaline, or may smell like fermented cheese; they contain much fat.

J. PORTER PARKINSON.

The reaction of the normal infants' stools ('*Le Nourrisson*,' 1914, II, p. 65).—E. Weill and A. Dufourt find that the stools of a healthy infant have a tendency to be habitually alkaline, but they may become acid or neutral without any definite cause. Among twenty children suffering from alimentary dyspepsia only two had a constant reaction, and this was acid. Even cases of stomatitis, which indicates acid fermentation, had stools which were as often alkaline as acid. These results controvert the statements of the Lausanne school to the effect that in carbohydrate dyspepsia the stools are always acid, and in albuminous, or simple dyspepsia, alkaline. Experimentally it was found that glucose in doses of 15 to 25 grms. had no influence on neutral or alkaline stools, and therefore the acidity of the fæces must depend upon more complex processes than the fermentation of carbohydrates. On the other hand, casein modified the habitual acidity of the stools, which become neutral or alkaline.

CHRISTOPHER ROLLESTON.

Research work in summer diarrhoea of children ('*Austral. Med. Journ.*,' 1913, II, p. 11).—R. L. Forsyth finds from the examination of over 300 cases that five main types of bacilli are found: (1) Shiga-Flexner type in 25 per cent. (2) Gaertner type in 24 per cent. (3) The slow fermenter, pure or mixed, in 26 per cent. (4) The Morgan type in 7 per cent. (5) Various liquefiers of gelatine.

F. R. B. ATKINSON.

The house-fly and diarrhoeal disease among children ('*Journ. Amer. Med. Assoc.*,' 1914, LXII, p. 200).—D. B. Armstrong has investigated the influence of the house-fly in producing diarrhoea among infants. Two areas were selected in the Italian quarter of New York which is essentially overcrowded and insanitary, each containing the same number of families and individuals. In the one every effort was made to eliminate the house-fly and to break its contact between filth and food by means of an educational campaign carried on by nurses among the mothers, the distribution of leaflets, and free tickets to cinematograph shows depicting the dangers of the house-fly; in addition the 1700 doors and windows in the area were carefully scoured and large flytraps were placed in all courtyards and stables. The other area was permitted to pursue its usual insanitary course. The author found that in the two areas the ratio of severe diarrhoeal disturbances in infants under five years of age was one to three and that the average duration of sickness in days was as $13\frac{1}{2}$ to $16\frac{1}{2}$. This shows that not only was there more sickness in the insanitary area, but the lessened resistance of the infants was the cause of greater severity in the disease. The sanitary improvement in the one district was further shown to have a beneficial effect on the general physical welfare of all the people in the district, for in it as compared with the unprotected area the number of cases of non-communicable disease was 36 as compared with 40, and of communicable disease 74 as contrasted with 125.

T. R. WHIPHAM.

Infantile diarrhœa in Brisbane ('*Austral. Med. Gaz.*,' 1914, xxxv, p. 247).—**C. A. Thelander** has treated 400 cases of this complaint in the last two years. His experiences were as follows: The average age-incidence was fifteen months; the average duration was nine days; there were five deaths (1.25 per cent.). About 80 per cent. of cases showed, first of all, loss of appetite. The bowels were often costive at first; the first stools were whitish or very pale yellow; after this they became green and fœtid. In about 3 or 4 per cent. a rose-pink stain surrounded the dark green of the stool, and the authors lays stress on this point. The treatment carried out in 390 of the cases was copious supplies of water, no food, calomel 1 to 2 gr. every hour for four doses in the evening and in the morning 20 to 30 gr. of mag. sulph., and if vomiting threatened $\frac{1}{2}$ gr. of menthol. If the vomit was very acid, mag. carb. 5 to 15 gr., one dose every hour for six or eight doses. This medicinal treatment was continued for four days. No milk or milk products were given until the stools were yellow.

F. R. B. ATKINSON.

The concentration of albumin in the blood-serum in the gastro-enteritis of infants ('*Riv. di Clin. Pediat.*,' 1913, xi, p. 347).—**G. Rovere** has undertaken this research by means of refractometric measurements in four groups of cases: (1) healthy infants (2) chronic diseases of the digestive system, (3) acute diseases of the digestive system, and (4) diseases of the respiratory organs. The conclusions he arrives at are that in chronic affections of the gastro-intestinal apparatus the concentration of albumin is not different from normal. In acute affections of the same kind the concentration increases in proportion to the bad general condition of the infant. This agrees with the increase in viscosity of the blood plasma found by Allaria. The determination of the refractometric index has a prognostic value, diminishing where there is a tendency to recovery and *vice versâ*. A water diet does not markedly influence the concentration of albumin in acute gastro-enteritis, but hypodermic injection of physiological solution diminishes it markedly, especially when it has reached a high pathological amount. The improvement produced is, however, temporary and after a certain number of hours the concentration easily reaches the same amount again. Hence the necessity of repeated injections at stated intervals.

VINCENT DICKINSON.

Prophylaxis of summer diarrhœa ('*Am. Journ. Obst.*,' 1913, LXVIII, p. 149).—**C. G. Kerley** says that successful prevention of death consists in keeping the digestive tract healthy. All milk is pasteurised, and the amount is not pressed during the hot months. The weight chart is disregarded. If a green stool occur castor-oil is given, and water or a cereal decoction is substituted for milk. During hot weather the clothing is reduced to a knit belly-band and a cheese cloth. Cold spongings three times a day are advised. Excellent results were obtained by W. H. Park, viz. fifty tenement children under one year old all being bottle fed with milk from a depôt. On the least sign of ill-health the doctor was notified, with the result that not a single infant died during the summer.

CHRISTOPHER ROLLESTON.

Medicinal treatment of summer diarrhœa ('*Am. Journ. Obst.*,' 1913, LXVIII, p. 152).—**W. L. Carr** advocates as inaugural treatment of mild

infections irrigation of stomach and colon, and castor-oil in 1 to 2 dram doses every hour for three doses. Calomel in doses of $\frac{1}{10}$ to $\frac{1}{5}$ gr. with $\frac{1}{2}$ gr. doses of sodium bicarbonate is useful if the flow of bile is slow, as shown by cheesy and offensive stools. If much colic paregoric should be added to the castor-oil in one dose only of 5 to 8 drops. If dry tongue and intestinal instability continue after the elimination of the food that has caused the disease, calomel, soda, and salol should be given in doses of $\frac{1}{20}$, $\frac{1}{2}$ and 1 gr. respectively. Peptonised gruel and malted foods made with or without milk lessen the work of the gastric mucous membrane. Fat-free whey and lactic acid fat-free buttermilk should then be tried. Bismuth is valuable if watery stools continue after cessation of acute symptoms. Toxæmic cases with high fever should be treated by colon irrigation of sterile salt water, at a temperature of 105–110° F. (1 dram to the pint) every two or three hours. If irritability of the intestine continue opium should be given in the form of the deodorised tincture in $\frac{1}{4}$ to $\frac{1}{2}$ minim doses. If much vomiting $\frac{1}{50}$ grain of morphia should be given hypodermically with $\frac{1}{600}$ grain of atropia. If much collapse and defective oxygenation brandy should be given in 3 to 5 drop doses. Camphor, strychnine, and black coffee can be used for the same purpose. After the attack is over two or three drops of dilute hydrochloric acid are useful in restoring the normal function of the stomach, and its work may be advantageously diminished by pancreatisation of the food.

CHRISTOPHER ROLLESTON.

One hundred and seventeen cases of infantile diarrhœa treated by intestinal implantation of *B. lactis bulgaricus* (*Journ. Amer. Med. Assoc.*, 1913, LXI, p. 164).—**R. O. Clock** has treated a series of cases of diarrhœa in infants with the Bulgarian lactic acid bacillus at the Babies' Hospital, New York. Tablets were made of a pure culture of the organism, and one or two tablets were usually given every two or three hours, but in severe cases two, or even three, tablets were given before and after each feeding, making a total in some cases of forty-two tablets in the twenty-four hours. Seventy-four of the infants were kept on this milk diet, and forty-three were placed on a diet of barley water for twenty-four to forty-eight hours, after which small quantities of boiled skimmed or whole milk were usually added to the diet. Twenty-nine of the latter were given a preliminary dose of castor oil, but no cathartic was administered to those who were on a milk diet. Improvement was shown under the implantation method by a rapid gain in weight, a rapid change in character of the stools to a normal colour and consistency, regardless of their number, and an improved general condition of the patients as evidenced by improved appetite, subsidence of fever, abatement of vomiting, and better appearance. The average gain in weight in these cases was 1·2 oz. for the first twenty-four hours, and 6·2 oz. at the end of the first week; whereas those who were given a starvation diet averaged ·2 oz. at the end of the first day and 1·7 oz. at the end of the first week. For implantation treatment only a pure culture of the bacillus must be used and the culture must show only viable organisms which must be present in sufficiently large numbers.

T. R. WHIPHAM.

Bacillus lactis Bulgaricus in infantile gastro-enteritis (*Med. Record*, 1914, LXXXV, p. 159).—**L. H. Schwartz** has treated fifty-five cases ranging from a few weeks up to two years of age by this method. Saline

irrigations were used in twenty-seven of the cases and bismuth in thirteen cases with tablets of the bacillus. He found the remedy of great value.

F. R. B. ATKINSON.

The treatment of infantile diarrhœa by saline injections (*'Practitioner,'* 1913, xci, p. 58).—**H. B. Day.**—Saline injections alone without drugs can cure most cases of infantile diarrhœa. Quinton's marine plasma is not superior to artificial saline of the same strength. The administration of medicine is preferable to injections of saline as a routine treatment of infantile diarrhœa. Disregard of dietary instructions is the commonest cause of failure of out-patient treatment. Injections should be given before actual symptoms of collapse arise.

F. R. B. ATKINSON.

Organisation of infant mortality work in Cleveland (*'Pediatrics,'* 1914, xxvi, p. 129).—**H. J. Gerstenberger.**—Cleveland is a town of 630,000 persons—an increase of 330,000 in the last fourteen years. The work started in 1902 with a modified milk dépôt, which was soon replaced by a dairy farm supplying good raw milk. In 1906 an infant clinic and visiting association were added. In 1907 a whole time medical director was appointed and a larger dispensary and emergency beds were provided. The milk was bottled or modified in two other rooms of the same premises. Branch dispensaries for healthy babies were then established and prophylactic stations provided with weighing machines and other simple apparatus. Ailing children were referred to the central dispensary described above, which also undertakes the modification of milk, its distribution by automobile, and the instruction of medical students. In 1911 the scheme was subsidised by the City Council to the amount of 10,000 dollars, and additional prophylactic stations, making eleven in all, were transferred to the Board of Health. Additional nurses were then appointed for cases of ophthalmia neonatorum, for children under guardianship, for teaching the children in school, and other nurses the principles of infant hygiene, and for the fresh air camp. Medical students are instructed in every aspect of the preventive work and in the methods of milk modification.

CHRISTOPHER ROLLESTON.

Heat and infant mortality (*'Arch. of Ped.,'* 1913, xxx, p. 916).—**J. W. Schereschewsky** refers to Liefmann and Lindmann, who distinguished between an early and late summer infant mortality. In the former there is a striking parallelism between the temperature chart and the mortality. Only temperatures of considerable height—22° to 25° C.—are effective in producing an increased infant mortality. In the late summer high mortality no longer sinks to the normal with falling temperature. In the early summer the infants die from diseases referable to the central nervous system, and only 18 per cent. from intestinal diseases. In September from 72 to 78 per cent. died from alimentary troubles. In the early summer 50 per cent. of the patients died after an illness lasting only one or two days. In the latter part only 20 per cent. Indoor temperatures must, however, be taken into account as Rietschel found in Dresden during the cool year of 1910, the indoor temperature was sometimes over 24° F. higher than the outdoor, and in the hot year of 1911 temperatures of 100° F. were reached. The circulation of air is another important factor. Ballard found that in those houses where there was free access to the wind the infant mortality was low. In a low-lying street in Dresden 18.49 of the living

children under a year old died, while in a high-lying street only 2.5 per cent. succumbed. Infants living in cool rooms, such as cellars, showed a smaller increase of summer mortality. The influence of milk as an exciting factor is then criticised. It was found that only the peptonising bacteria in milk have any harmful action when given to dogs. In true milk epidemics adults as well as children are affected. Infants fed on sterilised milk should not suffer, but as a matter of fact rather more infants brought up on this diet died in Halle than those brought up on an ordinary milk. A similar remark applies to condensed milks. Again, as several of the infants die within twenty-four hours, it is difficult to conceive how death can be produced by bacterial action in so short a period. Further, breast-fed infants showed twice the mortality in August that they did in June. The bacteriologist's position is then assailed, and it is pointed out that epidemics known to be due to specific organisms, *e. g.* cholera, are not influenced by temperature. The fly hypothesis is next examined, and it is pointed out that while only 32 per cent. of the breast-fed had diarrhoea, 90 per cent. of the bottle-fed were affected. Both sets of infants derived equal amounts of food from the table so that the selective action of the flies is hardly conceivable. Heat may cause death in infants from heat stroke—a cause of 3–7 per cent. of all infantile deaths. Heat further diminishes the appetite, but increases metabolism, decreases the power of the juices of the stomach, and diminishes the resistance of the organism to bacteria. The severest forms of diarrhoea only appear after exposure to very high indoor temperature, and in them high temperature is always present and in these hydrotherapy produces good results. From these considerations the author recommends improvement in housing conditions, especially as regards ventilation, fresh air, tepid baths, light clothing and feeding, as important points in the control of this disease.

CHRISTOPHER ROLLESTON.

Experimental researches on the influence of heat in young dogs (*Arch. de méd. des enf.*, 1913, xvi, p. 577).—**G. Schreiber and H. Dorlen-court** summarise their experiences as follows: (a) Warmth, by its direct action, can determine symptoms in young subjects. The higher the temperature the more noxious its influence. (b) Children at the breast are exposed to such influences as much as those artificially nourished. (c) Humidity in the air seems to lower the resistance of the subjects. (d) Young dogs introduced into an oven heated to 50° C. rapidly die, with symptoms first of excitement, then collapse, dyspnoea and hyperthermia above 40° C. (e) Young dogs placed in a chamber heated to 30° C. up to 37° C. show signs of excitement and fever, accompanied by dyspnoea and wasting. There are no digestive symptoms. Death occurred on the fourth day in one dog although the temperature did not pass 30° C., the others resisted a temperature of 37° C. but showed an arrest of development. They all succumbed to a temperature of 40° C. (f) In three of the dogs digestive symptoms occurred, in one vomiting, in two diarrhoea without vomiting. (g) Cold baths immediately after excessive heat produced a favourable effect.

F. R. B. ATKINSON.

Treatment.

Serum treatment of diphtheria in Budapest (*Virchow's Archiv*, 1913, ccxiii, p. 330).—**S. von Gerlőczy**, whose previous papers on this subject have recently been abstracted (*v. BRITISH JOURNAL OF CHILDREN'S DISEASES*, 1909, vi, p. 234, and 1910, vii, p. 409), records his eighteen years'

experience of the serum treatment of diphtheria, *i. e.* from October, 1894, to December, 1911. A table shows the number and mortality of his cases year by year, the number and percentage of cases with laryngeal involvement and the number of cases intubated. The mortality among 7985 patients was 14.1 per cent., the figures ranging from 27.5 per cent. in 1894 to 9.5 per cent. in 1905. The percentage of laryngeal cases in the total number was 45.1, ranging from 79.7 in 1896 to 27.9 in 1910. The mortality of the operated cases which in 1893 and 1894 had been 81.2 and 88.3 per cent. respectively sank in 1905 to 38.8 per cent. This fall is attributed not only to the serum treatment but also to the substitution of intubation for tracheotomy.

J. D. ROLLESTON.

Results of staphylococcus spray treatment in forty-two cases of diphtheria carriers (*Journ. Amer. Med. Assoc.*, 1913, LXI, p. 2293).—**W. A. Womer** finds that the use of the staphylococcus spray caused no unpleasant symptoms, but that its use did not appreciably lessen the period of quarantine as determined by the presence of diphtheria bacilli in the throat. Moreover, the preparation and distribution of the spray entail a large amount of work if there are many cases. The writer is of opinion that most of the carriers do not apparently spread the disease after sixty days from the day the disease begins.

T. R. WHIPHAM.

Treatment of whooping cough (*Thèses de Paris*, 1913-14, No. 249).—**L. C. E. E. Gravost** lays down the following principles of treatment: (1) Combat the paroxysms: For this he recommends an oily suspension of bromoform in an initial dose of four drops daily and for each year of life. (2) Modify the bronchial secretion: Inhalations of various drugs effect this, especially methyl salicylate two parts, eucalyptol one part. (3) Careful antiseptics of the skin and mucosæ. (4) Control the vomiting: The oral administration of adrenalin chloride 1 in 1000 m j-iiij daily, as recommended by Fletcher (*v. BRITISH JOURNAL OF CHILDREN'S DISEASES*, 1913, x, p. 183), has proved most efficacious in this respect.

J. D. ROLLESTON.

Vaccine therapy of pertussis (*Med. Record*, 1913, LXXXIV, p. 1125).—**P. Luttinger** used a vaccine made from cultures of the Bordet-Gengou bacillus in ten cases of pertussis aged from 1½ to 4 years and apparently reduced the severity and shortened the duration of the disease. The initial dose was usually 50 millions, the highest single dose 250 millions, the highest total dosage 750 millions and the lowest total dosage 150 millions. In some cases injections were given every twenty-four hours (*cf. BRITISH JOURNAL OF CHILDREN'S DISEASES*, 1912, ix, p. 331 and 1913, x, pp. 184, 428).

J. D. ROLLESTON.

Vaccine treatment of pertussis (*Policlínica*, 1914, II, p. 239).—**J. and R. Campos Fillol** used this treatment in fifteen cases, fourteen of whom were children aged from 15 months to 7 years and one an adult aged 30 years. The doses ranged with the age of the patient and the date of the disease from 50 to 100 millions. The best results were obtained with autogenous vaccines. Eleven were cured, two were improved, and in two there was no appreciable result. The injections were all given hypodermically, and produced little or no local reaction and only slight rise of temperature. As a rule, after the first injection there was a diminution in the number of attacks, which completely ceased after the third or fourth,

leaving in a few cases a non-paroxysmal cough, which disappeared entirely in a few days.

J. D. ROLLESTON.

Vaccine treatment of typhoid fever in children (*'Policlínica,'* 1913, I, p. 875).—**J. A. Jordán** records five cases of typhoid fever in children aged from 15 months to 12 years treated with vaccines. His conclusions are as follows: (1) The vaccine treatment of typhoid fever in children is harmless. (2) An auto-vaccine is to be preferred to a hetero-vaccine. (3) It is a valuable therapeutic method which rapidly transforms typhoid fever as regards its duration and severity, shortens convalescence and prevents relapses. (4) Large doses and repeated injections are unnecessary. The doses should vary from 5 to 30 millions according to age, and the number of injections from two to four.

J. D. ROLLESTON.

Vaccine therapy in the treatment of gonococcal vulvo-vaginitis (*'Glasg. Med. Journ.,'* 1913, II, p. 84).—**W. R. Jack** reports six cases of vulvo-vaginitis in young children treated with vaccines, but the results were none too encouraging. In three of the six cases a clinical cure was reached. In all the cases a comparatively speedy improvement was attained, the irritation and discharge being much lessened or becoming almost minimal; but in the unsuccessful cases it seemed impossible to get rid of this remainder, whatever dose was used.

J. ALLAN.

Buccal noma following measles cured by local applications of salvarsan (*'Bull. et mém. Soc. Méd. Hôp. de Paris,'* 1914, xxxvii, p. 813).—**H. Esbach** records a case in a girl aged 2 years. The progress of the disease was stopped, and in twelve hours improvement resulted from local applications of 1 in 15 to 1 in 5 salvarsan or neo-salvarsan in glycerin. The applications were made two to four times daily, but more than ten days elapsed before a complete cure was effected. Noma is usually attributed to a fuso-spirillar association, but in this case a smear showed only cocci which were decolourised by Gram.

J. D. ROLLESTON.

Local treatment of Vincent's angina and stomatitis with salvarsan (*'Bull. et mém. Soc. méd. Hôp. de Paris,'* 1914, xxxvii, p. 516).—**C. Flandin**.—A girl, aged 10 years, developed a fuso-spirillar stomatitis on the lesions of pneumococcal herpes. Peroxide of hydrogen, boracic lotion and other local treatment were unsuccessful, but the application of salvarsan powder caused a rapid cure. The paper also contains the histories of six cases of Vincent's angina in adults similarly treated with success, including one recently reported by the abstractor.

J. D. ROLLESTON.

Notes on the serum treatment of cerebro-spinal meningitis (*'Glasg. Med. Journ.,'* 1913, II, p. 254).—**W. C. Gunn** reports on eight cases. On account of the absence of complement from cerebro-spinal fluid, the anti-meningococcic serum was re-activated at the time of each injection by the addition to it of fresh normal human serum. The technique was as follows: 10 c.c. of blood were withdrawn from the median basilic vein of a healthy individual and allowed to stand for a few hours until the serum had separated. This quantity of blood yielded about 5 c.c. of serum in four hours. The serum was then added to the amount of anti-meningococcic serum which was to be injected, the dose varying with the age of the patient. Lumbar

puncture was then performed and a quantity of cerebro-spinal fluid, a little in excess of the volume of the serum to be injected, removed. The subdural injections were always performed with the patient under a general anæsthetic, but not deeply so. The serum was heated to 98° F. before being injected. The injection was made slowly, and, after its completion, the foot of the patient's bed was elevated for an hour to allow the serum to gravitate throughout the cerebro-spinal system. Severe headache and backache were complained of in some cases, and practically all of them were restless for some hours afterwards. The breathing was sometimes shallow for a short time, but no other untoward results were noted. The injections were repeated at intervals of one, two, three, or four days, and sometimes longer, depending upon the stage of the disease, the characters of the cerebro-spinal fluid, and the clinical appearances of the patients. The quantity of the growth of the meningococcus, obtained from a loopful of the deposit yielded by centrifugalising 10 c.c. of the cerebro-spinal fluid, was also taken as an index of the progress of the patient and as a guide to the frequency of the injections. As the fluid cleared and the colonies became more scanty the interval between the injections was lengthened. In favourable cases two or three doses sufficed. In three cases there was complete recovery, in one recovery, but the child was totally deaf, while four cases died.

J. ALLAN.

Treatment of meningitis by drainage of cisterna magna (*Arch. of Ped.*, 1913, xxx, p. 84).—**J. S. Haynes** lays stress upon the disappearance of the Fehling-reducing power of the cerebro-spinal fluid in cases of meningitis. This he regards as pathognomonic, and states that this test may be positive for twenty-four hours before organisms appear in the fluid. With this test positive operation should be immediately performed, except in diplococcal cases, which may be allowed to wait for twenty-four hours. The occipital bone should be trephined in the middle line one inch above the foramen magnum. He claims that here a continuous drainage can be effected without danger of hernia. As yet, out of eight cases, he has had no recovery.

REGINALD MILLER.

Treatment of chorea (*Journ. de méd. de Paris*, 1913, xxxiii, p. 815).—**Collin**.—In mild forms rest in bed, dieting, and freedom from excitement may be all that is necessary. In worse cases, ether sprays to the spinal column and electricity have been abandoned. Salicylate of soda even in large doses seems useless. Antipyrin should be given in doses of half a gramme for each year of age (Comby). These large doses may cause headache, vomiting, diminution in quantity of the urine and may have to be modified. In prolonged chorea arsenic is most in favour. Boudin's liquor, which is an acid solution of arsenic 1 in 1000, is very efficacious. One begins by 5 grm. of the solution daily and gradually increasing to 20 or 25 grm. Signs of poisoning should be looked for. Arsenical butter is said to be better tolerated. Weekly injection of 30–45 cgrm. of neo-salvarsan intravenously is a valuable remedy. In grave cases opium is to be recommended.

J. PORTER PARKINSON.

Arsenic in chorea (*Med. Press*, 1913, i, p. 616).—**Comby** recommends arsenic in the form of Boudin's solution, which is a solution of arsenious acid (1 in 1000). For a child over seven years of age the initial dose *per diem* is 5 grm., and this is increased daily by 5 grm. until 25 grm. is

reached, when the dosage is reduced in the same ratio. The child has thus nine days' arsenic treatment, by which time the movements have stopped. The integrity of the kidneys should be carefully investigated, as arsenic is contra-indicated if there is albuminuria, and it ought also to be used with caution if the urinary secretion is scanty.

J. ALLAN.

Prolonged hot baths in the treatment of chorea (*Med. Rev. of Reviews*, 1913, xix, p. 655).—**W. P. Lucas** reports several cases of chorea treated successfully by this method. He began with quarter-of-hour immersions twice daily in a bath of 100° F.; the duration was gradually increased to three-quarters of an hour and the temperature to 110° F. or 112° F. A course of about three weeks was given, the improvement being steady during that time, at the end of which the choreiform movements ceased. One case relapsed after about a year and had a second course of the treatment with favourable results.

J. PORTER PARKINSON.

The treatment of paralysis of anterior poliomyelitis (*Journ. Amer. Med. Assoc.*, 1913, lxi, p. 2219).—**H. W. Frauenthal** states that the best results are obtained when electrical treatment is begun as soon as paralysis appears and even before the temperature is normal. He gives a sinusoidal current, alternating with a combined galvanic and faradic current which contracts seventy-two times to the minute, synchronous with the heart-beat. Sponge electrodes are used and are applied to the origin and insertions of the muscles as nearly as possible. The writer thinks that too much stress has been laid upon the apparent reaction of degeneration in prognosis and is of opinion that muscles are frequently capable of contraction to a stronger current than the cutaneous surface will tolerate. The strength of the current to be used in treatment should be the weakest that will produce a contraction and is never to be used after contraction of the muscle ceases, nor longer than from two to three minutes on any particular muscle or from six to twelve minutes on the body at one sitting. Strychnine may be given internally or a solution used on a sponge and introduced locally to increase the contraction of the muscle-fibres. Massage is also to be used in the form of light stroking and percussion, together with active and passive exercises. The affected limb should also be immersed in warm water at 95°–102° F. for twenty minutes each night. The notes of a series of cases which have been treated in this way are given.

T. R. WHIPHAM.

Treatment of acute nephritis in the infant (*Ann. de Méd. et Chir. Inf.*, 1914, xviii, p. 229).—**Renault** and **Seginet**.—Infantile acute nephritis shows itself chiefly by diminution of urine and retention of chlorides and nitrogen. To relieve the kidney congestion, increase diuresis and stimulate the elimination of the toxins by the skin and bowels are the therapeutic indications. To relieve congestion, dry cupping is useful or wet-cupping or leeches over the kidney region. Wet packs, hot-air baths and vapour baths act on the skin or occasionally baths at 38° for fifteen minutes. Drugs to produce diuresis are not without danger, suppression of salt and reduction of liquid may suffice, or infusions of onions, cereals, *uvæ ursi*, grape juice, etc. Calcium chloride in small doses is a dechlorinating diuretic, and to increase the output of nitrogen, lactose 10–50 grm. a day may be given or subcutaneous injections of glucose 20 c.c. of strength 45 in 1000. Extract of dry kidney may be given 0.10 cgrm. a day for each year of age. Syrup of buckthorn is a useful purgative. Pilocarpine is a dangerous sudorific, acetate of

ammonia is much safer. For diet vegetable broths and cereals and milk. If the latter produce digestive troubles, carbohydrates such as cereals, rice, potato, carrots, lettuce, green haricots, peas, sugar, fruit, etc., may be given. When œdema has disappeared salt may be allowed in a small quantity, and later chicken, eggs, etc., may be given. Complete rest in bed is necessary at first, and careful disinfection of the throat and nose must be carried out. If there be hæmaturia, calcium chloride may be given, or astringents such as tannin or ergot; if it be excessive, adrenalin. In suppression two drops of tincture of cantharides; in the last extremity, decapsulation or nephrotomy. For convulsions chloral and bromides and lumbar puncture. For cardiac failure digitalis and squills are useful, and one must remember that in infants small doses produce the best effects. If the ætiology of the nephritis is diphtheria, 10 c.c. of Roux's serum may be given every three or four days for 3 or 4 doses; if syphilis be the cause mercurial treatment is advisable.

J. PORTER PARKINSON.

Human serum treatment for hæmorrhagic diseases of the new-born (*New York State Journ. of Med.*, 1913, XIII, p. 88).—**J. E. Welch.** A baby, apparently healthy, had on the third day after birth slight bleeding from the vagina. Within a few hours the gums began to bleed, and the bleeding from the vagina increased considerably. At the end of twenty-four hours there was considerable bright red blood passed in the stools. The temperature gradually rose and reached 103° F. on the fifth day. The weight rapidly declined and the voice grew very weak. Normal human blood serum injections were begun at midnight on the fifth day. One ounce was given hypodermically and repeated twice daily for four days. The bleeding began to diminish in a few hours, and at the end of forty-eight hours had ceased entirely, and the infant rapidly regained its normal functions. The author discusses the sites of hæmorrhage, method of production, means of treatment, etc.

J. ALLAN.

Treatment of purulent pleurisies in children (*Journ. de Méd. de Paris*, 1913, XXXIII, p. 499).—**Savariaud.**—The infection comes by way of the bronchi and lung, or more rarely by the lymphatics, but usually by the blood. Pneumococcal empyema is relatively benign and may sometimes be absorbed. It is often encysted. Streptococcal pleurisy is much less common in children; it may complicate broncho-pneumonia or scarlet fever. Tuberculous pleurisy is rarely purulent at first and has an insidious, often afebrile, course. The putrid and gangrenous varieties may follow gangrene of the lung or appendicitis. The tuberculous variety is best treated by aspiration as operation is apt to leave a fistulous channel which may become infected. Pneumococcal varieties may be treated by aspiration if the organism seems to be of slight virulence, but if the liquid persists pleurotomy should be done. The other varieties should be treated by pleurotomy. The operation advised by the author includes the resection of 4-5 cm. of rib. The cure of favourable cases should not exceed seven weeks and the temperature should remain normal after the operation. If the pus does not drain well the cavity may be washed out with a warm solution of hydrogen peroxide. The author considers this quite a safe proceeding if the fluid be warm and the cavity not distended with the fluid. Respiratory exercises are very useful during the last weeks of treatment.

J. PORTER PARKINSON.

The healing process of osteo-sarcoma under the influence of the Röntgen rays (*Journ. Amer. Med. Assoc.*, 1913, LXI, p. 547).—**G. E.**

Pfahler reports twelve cases of osteo-sarcoma which he has treated with the Röntgen rays. The majority of these were children and the results have been satisfactory. According to the writer osteo-sarcomata heal by a progressive deposit of lime salts in the tumour areas, until the tumour area attains the solidity and density of normal bone. This process usually begins within a month and is progressive for a year or more, continuing long after the röntgenotherapy has been discontinued. In the twelve cases treated, including the inoperable and recurrent, seven, or over 58 per cent. of the patients completely recovered and remained well from five months to eleven years. One other patient had nearly recovered, interrupted treatment, and remained free from symptoms for five months, when a recurrence followed traumatism. In only one case was there no improvement. Skilful treatment should be given in any inoperable case and should follow when operation seems advisable. When operation will result in deformity or serious loss of bone, röntgenotherapy should be tried for at least a month. The treatment should be given by some one who is familiar with the technique of deep röntgenotherapy. The following are the principles governing the modern technique: The rays must have good penetration, or they will be absorbed by the overlying tissues before reaching the bony tumour. Even with the most penetrating rays the greater proportion will be absorbed by the superficial tissues. The most careful attention is therefore necessary to keep the tube in good condition during the entire treatment. The rays should have a penetration of from seven to eight of the Benoist scale. The quantity of rays should be measured carefully during each application, and the limit of the erythema dose should be reached as quickly as possible, but should not be exceeded. The duration of each application and the frequency will depend on the individual operator's technique and apparatus, but when an erythema dose has been given at any one area of skin, this one area should receive no more treatment for at least two weeks. To measure the dose the Sabouraud pastille and the Holzknacht modified scale, or radiometer, should be used. The skin should be protected by filters. For this the author uses a piece of sole-leather $\frac{1}{8}$ in. thick, and from 1 mm. to 3 mm. of aluminium. This, of course decreases the total quantity of rays, but gives a greater proportion of penetrating rays in comparison with those absorbed in the superficial tissues. It must not be forgotten that a patient can be burned through filters, and a burn is always a disadvantage. Cross-fire application of the rays consists in directing them toward the centre of the tumour from as many angles and through as many different areas of skin as possible. In this way the proportional deep dose is greatly increased, and it is possible to make the dose in the tumour equal to that absorbed by the skin. With such technique massive doses can be given safely.

T. R. WHIPHAM.

X-rays and hypertrophy of the thymus (*Paris Méd.*, 1913-14, iv, p. 599).—**E. Albert-Weil**.—From 1906 to the beginning of 1913 eleven successful cases of hypertrophy of the thymus treated by X-rays have been published. Since the writer's last communication to the Société de Pédiatrie (*v. BRITISH JOURNAL OF CHILDREN'S DISEASES*, 1913, x, p. 27), in which he reported three successful cases, he has treated four other children with hypertrophy of the thymus, and in each case obtained a rapid and complete cure by X-rays. Thymectomy is now unnecessary, and has been abandoned in favour of X-ray treatment by its previous supporter, Veau.

J. D. ROLLESTON.

Treatment of thread-worms (*Ann. de méd. et Chir. inf.*, 1914, XVIII, p. 91).—**Perrin and Théry** point out that the chief habitat of these worms is the ileocæcal region and not the rectum, and so local treatment cannot succeed by itself. They recommend in addition to separate salt-water injections into the bowel the administration of thymol in the following way: Fasting, then cachets each containing 0.75 to 1 grm. of powdered thymol should be given at intervals of one hour, and half an hour after the third cachet a glass of seidlitz, and a quarter of an hour later a second dose. Water only should be given the day of treatment, as alcohol dissolves thymol and leads to its absorption. The authors also speak well of santonin with calomel two days a week for six weeks. Re-infection by the fingers should be guarded against as usual.

J. PORTER PARKINSON.

Reviews.

THE PRACTICE OF PEDIATRICS. By CHARLES G. KERLEY, Prof. Dis. Child., New York Polyclinic Medical School and Hospital. Pp. 878. Philadelphia and London: W. B. Saunders & Co., 1914. Price 25s. net.

A NEW text-book of pædiatrics can hardly escape comparison with those of other authors. In the present work, perhaps the most noticeable feature is the amount of attention paid to the general management of children in health and disease. Prof. Kerley rightly includes in the practice of pædiatrics considerably more than a mere study of children's diseases. Thus the author pays considerable attention to such matters as the exercise and sleep, the nursery and the control of healthy children, and writes well of the general care of children during illness. Other features of the work which are also very attractive are the care with which minor ailments are described and the fulness of the sections dealing with treatment throughout the book. A special chapter is devoted to the discussion of gymnastic therapeutics.

These points, we think, are the distinctive and valuable features of Prof. Kerley's book and enable us to give a hearty welcome to his work.

For the rest, the volume shows many similarities to others of American origin. There is the long discussion on infant feeding which seems so inevitable, although we must gratefully acknowledge that in the present work the subject is not dealt with so lengthily or so over-theoretically as in some other books. There are some curious instances of lack of proportion in the fulness of description in different diseases. To allot more space to "adherent prepuce" than to "adherent pericardium" is surely an example of this; nor can we help noting that the author, in the ten lines allotted to the latter condition, does not avoid being misleading.

The publishers must be praised for having produced so large a work, which is fully illustrated, in so convenient and pleasant a form.

R. M.

INFANT FEEDING. By CLIFFORD G. GRULEE, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College, etc. Second Edition. Pp. 314, with 29 illustrations and 8 coloured plates. Philadelphia and London: W. B. Saunders Co., 1914. Price 13s. net.

THE second edition of this book has been revised, and the author has embodied in the text many scientific facts which have come to light during

the past two years. Essentially, however, the book remains the same—a clear and practical treatise on the feeding of infants, from which much useful information may be gleaned. As we remarked in our notice of the first edition,* the author is a follower of the German school rather than of the methods advocated by so many of his fellow countrymen—a fact which perhaps lends additional value to the work.

The book is well got up, and the illustrations, consisting mainly of full-page reproductions of photographs, are excellent. The coloured plates may fairly be termed artistic, and the majority of them are distinctly good.

T. R. W.

DISEASES AND DEFORMITIES OF THE FOOT. By JOHN JOSEPH NUTT, B.L., M.D. New York: E. B. Treat & Co. Price \$2.75.

THE 'Diseases and Deformities of the Foot' is a book specially written for the use of physicians, and we can say with confidence that almost every physician could read this book with great benefit. Though the peculiarities and deformities of the foot form only a small part of orthopædics, it is the part that perhaps is most neglected. We see the truth of this in this country, for the physicians apparently have only just become aware that the proper treatment of paralytic deformities, due to infantile palsy, is to place the limb in the correct position, and maintain it there, if necessary, with the application of splints. Luckily, celluloid splints have taken their fancy, and they now teach their use, although these present no advantage over the light wood splints, or the still lighter poroplastic splints, the application of which has been a routine teaching on the surgical side for many years.

Dr. Nutt has dealt with the subject of the foot extremely fully, and his illustrations of the disabilities resulting from the different deformities are most interesting. We are glad to see, too, that the more complicated apparatus continually being invented by his ingenious countrymen is not preferred to the simpler and quite as efficient methods.

We can confidently recommend this book, not only to the physician, but to the general practitioner and surgeon as well. It is well illustrated and the points are clearly made.

D. C. L. F.

THE WELLCOME HISTORICAL MEDICAL MUSEUM.

The Historical Medical Museum, which was founded by Mr. Henry S. Wellcome in connection with the Seventeenth International Congress of Medicine, was re-opened on May the 28th as a permanent institution in London. It is now known as the "Wellcome Historical Medical Museum" and is open daily from 10 a.m. to 6 p.m., closing at 1 p.m. on Saturday; entrance 54A, Wigmore Street, Cavendish Square, W. Since closing last October the collections in the Museum have been considerably augmented and rearranged. Many objects of importance and interest have been added which it is hoped will increase the usefulness of the Museum to those interested in the history of medicine. Members of the medical and kindred professions are admitted on presenting their visiting cards. Tickets of admission may be obtained by others interested in the history of medicine on application to the Curator, accompanied by an introduction from a registered medical practitioner. Ladies will be admitted *only* if accompanied by a qualified medical man.

* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1912, ix, p. 564.